THE IRON TRADE REVIEW

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BETTER INQUIRY

IN SOME DISTRICTS FOR PIG IRON,

But There Are Weak Spots — Good Tonnage of Rails Sold by Tennessee Company—Coke Selling Agency Proposed.

The pig iron market during the past week has shown some signs of increased activity in several districts, especially at Pittsburg, but at the same time there are evidences of weakness, particularly in the south, where very low prices are being made, not only by the middlemen but by the furnaces, and the market seems to be settling toward $13, Birmingham, for No. 2. The inquiry of the leading pump interest for 6,100 tons is expected to be closed soon; the American Radiator Co. is in the market for 10,000 tons, and a western Pennsylvania manufacturing concern is expected to come into the market for from 15,000 to 20,000 tons. A New Jersey machinery maker is inquiring for 6,000 tons. Rumors are current of sales of basic at Pittsburg at less than $16, valley, furnace, but it is believed that, as in another recent case, trading of other material was involved, and that the price named was much below the actual market. The fact that large stocks are not being accumulated during the present dull period is shown by reports of the furnaces of the Eastern Pig Iron Association, which indicate that the accumulation of iron has remained practically unchanged during the past month.

Foreign Iron Ore

Receipts of ore from foreign sources outside of Cuba and Newfoundland have decreased rapidly this month, and it is estimated that the movement will be only about one-third that of January. The scarcity of boats continues, and it is difficult to charter even at the advanced rates. The reselling of a cargo of 5,000 tons of Spanish ore was due to the fact that it was consigned to a furnace which was compelled to go out of operation on account of an accident.

Monthly Production

Reports from foreign countries show improved conditions, and the export movement from this country is heavy. The ingot and finished materials tonnage of the Steel Corporation for February will be large, but the pig iron production will soon show some diminution. The Carnegie Steel Co. has ordered out one furnace at New Castle and one Ohio furnace for relining. These stacks will go out this week. It does not seem probable that the Steel Corporation will buy any more pig iron at any time in the near future.

Structural Material

Some fair tonnages of structural material have been awarded, but prices show considerable irregularity for both the material and fabricating. A decided change for the better is expected as soon as the cold weather ends. The Pennsylvania railroad train sheds at Baltimore, 1,200 tons, have been awarded to the Jones & Laughlin Steel Co. The Avery building, Peoria, Ill., 1,200 tons, will be erected by the Valentine Jobst Co., Peoria. The contract for the foundry and machine shop for the Laidlaw-Dunn-Gordon Co., Cincinnati, 600 tons, was taken by the McClintic-Marshall Construction Co.

Rail Sales

The Tennessee Coal, Iron & Railroad Co. reports rail sales amounting to 26,250 tons to the Frisco lines; 10,500 to the Mexican Northwestern; 5,250 to the Louisville & Nashville railroad; 1,500 to the New Orleans & Northeastern railroad, and 500 tons scattering. The Illinois Steel Co. reports 5,000 tons taken by the Monon, and 3,000 tons scattering. The Illinois company's share of the B. & O. order is stated officially as 22,000 tons. Bar iron shows considerable weakness in the east, where some plants are closing and low prices are being named. Price of rivets and bolts has been advanced 5 per cent on smaller sizes. Wire products are making a good showing.

Coke and Old Material

A number of leading independent coke producers of the Connellsville region have held a meeting for the purpose of forming a selling agency, and further meetings will be held to perfect arrangements. The coke market continues very weak and prices are low. The report that the scrap buying arrangement of the allied interests in the Philadelphia district has been dissolved was not well founded. Prices in that district and elsewhere are weak, and there is little demand for old material anywhere.

MORE INQUIRY

For Basic Pig Iron—Some Scattering Lots Disposed of.

Pittsburg, Feb. 23. (By wire.)

Late reports show that additional inquiries for basic pig iron are coming out. While most of the inquiries are for prompt shipment, a few of them call for monthly deliveries up to Jan. 1, 1911, and involve heavy tonnages. A few basic and Bessemer deals which were to have been consummated during the first part of this week have been held up temporarily. A local interest has been able to pick up a few scattering blocks of basic for prompt shipment at a figure below the $17 mark, at which the last legitimate sale involving large tonnage was made. It is understood that this interest within the last three weeks has taken all told in the neighborhood of 1,500 tons of basic in small lots of from 300 to 500 tons each. The Standard Sanitary Mfg. Co. has bought 500 tons of No. 3 foundry iron for prompt delivery at $16, delivered, New Brighton, Pa. This is equivalent to $15.45, valley furnace.

THE WEEK IN IRON CENTERS

PITTSBURG.

Increased Demand in Several Finished Lines—Pig Iron Inquiries.

Office of THE IRON TRADE REVIEW,
510 Park Building, Feb. 21.

The temporary lull that has been noticed in the iron and steel industry for the last five or six weeks is gradually disappearing and the situation in this district, taken as a whole, is more satisfactory than at any time since the first of the year. A still further improvement in market conditions, both as to new buying and specifications, is noted in several branches this week. In some lines where specifications fell off slightly during the first week in February, makers now report that mill entries are as heavy as at any time in January. There is less talk of price concessions at present, and, while the spring buying movement in some lines has not started as yet, there appears to be a much stronger tone to the market in general.

Specifications for standard and light rails, while not heavy for this season of the year, so far this month have exceeded the record for the corresponding period in January. There is also an increase in the volume of new business being booked and the outlook for the next several months is considered promising. While there is little new tonnage in plates coming out, mill entries are slightly heavier and there is a large volume of business in sight.

Demand for merchant bars is increasing. Railroads are entering the market for bar iron and this line is much stronger than for several weeks. Makers have been unable to show any improvement in promised deliveries on steel bars. After a delay of some weeks, prospective builders are entering the market for structural material in fairly large lots. Pipe makers are starting initial shipments on large contracts placed during the year-end buying movement. Two or three large orders now pending likely will be closed in a few days.

Foundry pig iron is showing more activity than the other grades. Several inquiries for fairly large tonnage of No. 2 foundry are out and a well-known manufacturing interest will enter the market shortly for from 15,000 to 20,000 tons. A few inquiries for Bessemer and malleable pig iron are also noted.

Aside from the effort on the part of independent coke producers to form a general selling agency with headquarters in this city, there have been no developments that would cause a change in the coke situation. Prices are low and the market is without life.

There is positively no demand for old material and as a result there has been a still further decline in the price of nearly every grade of scrap.

Pig Iron.—With a larger number of inquiries pending than for five or six weeks and a few scattered sales being reported, the local pig iron market continues to show a little more life. The foundry pig iron market is especially active, and inquiries involving some fairly good tonnage are noted. The American Radiator Co. is in the market for 10,000 tons, and a well known Western Pennsylvania manufacturing interest is expected to enter the market within the next week or ten days for from 15,000 to 20,000 tons of foundry iron for forward delivery. Another inquiry for 2,000 tons for a Northwestern Pennsylvania interest is noted. While it is well known that some sales have been made on a slightly lower basis, the majority of the foundry pig iron sales are said to have been made on a basis of $16.75.

While no large sales of Bessemer are reported in this district, several fairly good inquiries are pending. An interest, west of Pittsburg, is in the market for 3,000 tons of Bessemer, delivery to be extended over the next three months. Other inquiries calling for from 500 to 2,500 tons of Bessemer are noted. Some of these inquiries are not general. Apparently no effort is being made to obtain a lower price than $18, valley, and it is expected that several fairly good deals will be put through at this figure, as the indications are that there will be a buying movement within the next 30 days.

The basic pig iron situation is one that is causing considerable speculation. While it is admitted on all sides that the $17, valley, quotation could be shaded 50 cents a ton on desirable business, brokers continue to quote $17 for standard basic. A few scattered carload lots of off basic have been sold in this district within the last few days, but such sales would have no effect upon the market conditions. There have been no legitimate basic pig iron sales for several weeks, although it is generally understood that this grade has figured in exchange deals in two instances within the last month.

Demand for malleable pig iron appears to be a little heavier than last week, and some fairly good inquiries are noted. A few scattered sales are reported at prices slightly below the $17.90, Pittsburg, quotation, but the latter figure is understood to be the market level. We quote:

Pig Iron Prices.

(Prompt Shipment.)

Bessemer, valley	$18.00
Bessemer, Pittsburg	18.90
Basic, valley	17.00
Basic, Pittsburg	17.90
No. 2 foundry, Pittsburg	17.65
Gray forge, Pittsburg	17.15
Malleable, Pittsburg	17.90

(First Quarter.)

Bessemer, valley	18.00
Bessemer, Pittsburg	18.90
Basic, valley	17.25
Basic, Pittsburg	18.15
No. 2 foundry, Pittsburg	18.15
Gray forge, Pittsburg	17.15
Malleable, Pittsburg	17.90

Ferro-Alloys.—There is not much demand for any of the ferro-alloys at present, although a few sales of ferro-manganese in carload lots are being made on a basis of from $44 to $45, Baltimore. Inquiry for 50 per cent silicon in small lots appears to be a little stronger, although few sales are reported.

We quote ferro-manganese at $44 to $45, Baltimore, for immediate shipment or for first half, and from $45 to $45.50 for second half. The freight rate from Baltimore to Pittsburg is $2.30 per ton.

Fifty per cent ferro-silicon is quoted at $62.50 to $63.50, Pittsburg; domestic 12 per cent, $25.90; 11 per cent, $24.90; 10 per cent, $23.90, Pittsburg, for prompt, first quarter, and $1 advance for second quarter. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—Notwithstanding that new tonnage in plates and specifications are not as heavy as a few weeks ago, makers are more optimistic than several days ago, and prices appear to be a little firmer. Makers say that they are not accepting business at prices below 1.55c, and some makers are again quoting 1.60c. Within the next 30 days, it is expected that there will be a large amount of new business in sight, including the 14,000 tons of plates to be used in riveted pipe work at Portland, Oregon, which, in all probability, will come to a local mill. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.55c to 1.60c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper

plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½ inch to and including 3-16 inch plate on thin edge, 0.10c; under 3-16 inch and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—Makers of sheets report that specifications are as heavy as at any time this year, and the temporary lull noted last week is said to have disappeared. The temporary let-up is thought to have been due to the fact that some of the big jobbers had obtained a normal supply and were not in a position to take on additional stock. During the last several days, however, it has developed that some of these jobbers are now taking additional tonnage and manufacturers are specifying as freely as ever. Mills are still operating to capacity. Present sheet prices, Pittsburg base, are as follows, with $1 a ton added as the delivered price in the Pittsburg district:

Blue annealed sheets, Nos. 3 to 8, 1.70c; Nos. 9 to 10, 1.75c; Nos. 11 and 12, 1.80c; Nos. 13 and 14, 1.85c; Nos. 15 and 16, 1.95c; box annealed sheets, Nos. 10 and 12, 2.05c; Nos. 13 and 14, 2.10c; Nos. 15 and 16, 2.15c; Nos. 17 to 21, 2.20c; Nos. 22 to 24, 2.25c; Nos. 25 and 26, 2.30c; Nos. 27, 2.35c; No. 28, 2.40c; No. 29, 2.45c; No. 30, 2.55c; galvanized sheets, Nos. 12 to 14, 2.50c to 2.55c; Nos. 15 and 16, 2.60c to 2.65c; Nos. 17 to 21, 2.75c; Nos. 22 to 24, 2.90c; Nos. 25 and 26, 3.10c; No. 27, 3.30c; No. 28, 3.50c; No. 29, 3.60c; No. 30, 3.85c; painted roofing sheets, $1.70 per square for No. 28 gage, 2½-inch corrugation, and galvanized roofing sheets, $3 per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—There has been no change in mill operations during the last week. Makers are taking some new tonnage, and specifications are heavy enough to keep the plants operating to capacity. The leading interest continues to operate 185 out of a serviceable capacity of 285 hot mills, and independents say that they have enough business on the books to keep their plants going until July 1. Shipments to manufacturers continue to increase, the total shipments so far exceeding that of the first two months of other banner years. The base price on tin plates, over which some premiums have been paid for desirable business, is as follows:

Coke tinplate, 100-pound basis, 14 x 20, $3.60, f. o. b. mill, Pittsburg district.

Rails and Track Material.—Additional strength is shown in the rail market this week. There has been a slight increase in new business, and specifications for standards and light rails are heavier than the previous week. Official reports show that specifications so far this month have been heavier than for the corresponding period in January, and it is expected that the report for February will show a healthy gain over the initial month. The leading interest now has enough tonnage on its books to assure steady operation of its mills for several months at the present rate of production and is regularly entering several thousand tons of standards in small orders each week. Demand for light rails is stronger than at any time this year, the total bookings for the week being in excess of the previous week. There is also a larger demand for track bolts, premiums still being paid for desirable deliveries. We quote standard Bessemer rails as follows, the base price for open-hearth rails being $30, mill:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails on base weight of 40 to 45 pounds, $28, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburg; standard spikes, 1.75c to 1.80c, Pittsburg; hand spikes, 1.80c to 1.85c, Pittsburg; track bolts, 2.50c, Pittsburg.

Steel.—Conditions surrounding the semi-finished steel market show little change. Owing to the sold up condition of many of the mills, only a few of the makers are in a position to accept new tonnage and there appears to be little demand for any of the semi-finished lines, users being well covered for their early needs. A few scattered sales of Bessemer sheet bars are noted on a basis from $28.50 to $29, at makers' mill. The outlook for this market during the last half of the year is exceedingly good, as some of the makers have contracts which will keep their plants busy until well into the fourth quarter. It has not been decided as yet when books will be opened for second half delivery.

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $27.50 to $28, Pittsburg, with the usual extras for size and analysis, and open-hearth rolling billets, from $30 to $31, Pittsburg. Forging billets are quotable at $32 to $33, Pittsburg. Sheet and tin bars are quoted at $28.50 to $29.00 at makers' mill, located within the $1, Pittsburg, freight limits.

Hoops and Bands.—Specifications show an increase over the previous week and new business is a little heavier. There is less talk of price concessions, and the 1.60c base price is regarded as the minimum. We quote the present market as follows:

Hoops in carload lots, 1.60c to 1.65c; in less than carload lots, 1.70c to 1.75c; bands, 1.50c to 1.55c, base, with net extras as per standard steel.

Merchant Bars.—There has been a noticeable improvement in the merchant bar market, both in the volume of new business and the manner in which users are specifying. Makers of steel bars have been unable to make any improvement in deliveries which extend over a period of from four to five months. The bar iron market shows a firmer tone on account of some of the railroads coming into the market for their requirements. Specifications against bar iron contracts also show an increase. Some excellent business in shafting has been booked. We quote the market as follows:

Common iron bars, 1.70c to 1.75c, Pittsburg; Bessemer and open-hearth steel bars, 1.45c to 1.50c; plow and cultivator, 1.45c to 1.50c; channels, angles, zees, tees, under 3-inch, 1.45c to 1.50c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds, 0.15c advance; less than 1,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 55 per cent in carloads and 50 per cent in less than carloads, delivered in base territory.

Planished and machine straightened tire is 1.70c base; iron finished tire under 1½ by 1½ inches, 1.65c, both plus net extra on tire card; iron finished tire, 1½ by ½ and over, 1.50c, plus net extra on the steel bar card.

On cold rolled strip steel, with 1½ inches and wider, and 0.100-inch and thicker, we quote base prices for 100 pounds, $3.35 on hard, and $3.60 on soft, except in carload lots of one size, where the price is lower.

Structural.—A much stronger tone is noticed in the structural material market this week, although actual bookings are not so heavy as for other corresponding periods this year. During the last several days, architects and prospective builders have intimated that they will begin construction this spring on a number of new structures which will call for a large amount of structural material. Reports of price concessions on structural material are still being circulated, but leading interests say that market quotations generally are being maintained. Some business is being booked at 1.60c, although 1.55c is thought

to represent the market level. Very little, if any, tonnage is being accepted below this figure. The McClintic-Marshall Construction Co. has been given the contract for fabricating the steel and erecting the foundry and machine shop for the Laidlaw-Dunn-Gordon Co., at Cincinnati, which will require about 600 tons of steel. The same company has received a contract for the Northwestern Fuel Co.'s building for storing coal at Superior, which will require about 450 tons of steel. The American Bridge Co. has been given the contract for the United States government floating dry-dock at Vicksburg, which will require 400 tons; also a contract for 200 tons for the Irene Kaufmann Settlement School, Pittsburg. Several other large contracts are now pending and likely will be awarded within the next ten days. We quote shape prices as follows:

Beams and channels, 15-inch and under, 1.55c to 1.60c; over 15 inches, 1.65c to 1.70c; zees, 1.55c to 1.60c; tees, 1.55c to 1.60c; angles, from 3 to 6 inches, 1.55c to 1.60c; over 6 inches, 1.55c to 1.70c; universal and sheared plates, 6¼ inches wide and wider, 1.55c to 1.60c.

Merchant Pipe.—Notwithstanding that the spring buying movement is not expected to start for another week or so, makers of tubular goods report that existing conditions are satisfactory. Delivery has been started on some of the big contracts placed last fall, although in some cases the initial shipment will not be made until some time in March. With the business contracted for during the year-end buying movement and the small orders that are being placed from time to time, most of the mills are assured steady operation for four or five months at least. It is now believed that the big order for field pipe to be used in western territory will be awarded next week, as it is expected that all bids will be in by the latter part of this week. We quote the following official discounts in carload lots, subject to the usual discount to the largest buyers, merchant pipe, where specified, being furnished in from ⅛ to 6 inches, and in plugged and reamed lots:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	70	54	65	..
⅜ inch	71	57	66	52
½ inch	74	62	69	57
¾ to 6 inch.....	78	68	73	63
7 to 12 inch.....	72	57	67	52
13 to 15 inch.....	51½	..	..	..
PLUGGED AND REAMED.				
1 to 4 inch.....	76	66	71	61
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	63	51	58	46
½ to 4 inch.....	70	58	65	53
4½ to 8 inch.....	66	54	61	49
9, 10, 11 and 12 inch	59	47	54	42
DOUBLE EXTRA STRONG PLAIN ENDS				
⅛ to 8 inch.....	59	48	54	43

Boiler Tubes.—Conditions surrounding the boiler tube market continue satisfactory. Specifications in some cases show a slight increase and a fair amount of new business is being booked. Deliveries are a little easier than in January.

	Steel.	Iron.
1 to 1½ inch	49	43
1¾ to 1¼ inch.....	61	43
2½ inch	63	48
2¾ to 5 inch.....	69	55
6 to 13 inch	60	43

2½ inch and smaller, over 18 feet, 10 per cent net extra.

2¾ inch and larger, over 22 feet, 10 per cent net extra.

To destinations east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg.

Wire Products.—Rumors of price concessions are still being circulated, but sellers of wire products insist that these reports have been greatly exaggerated. It is pointed out that many of the contracts for wire nails at $1.85 which were made during the closing months of the old year expire Feb. 11. Owing to the fact that buyers in many cases were unable to take the full tonnage contracted for because of light demand, makers, in some instances, have agreed to extend indefinitely the time limit on such contracts. As the price on wire nails is now quoted at $1.85, this may account for reports of prices being shaded. The same explanation applies to alleged shading of prices of wire. There is little new buying at present, as the spring business has not yet started. This market, however, shows a stronger tone than a few weeks ago. We quote the market as follows, contracts with the jobbing trade being limited usually to 60 days:

Wire nails, jobbers' carload lots, $1.85; retailers' carload lots, $1.90; painted barb wire, jobbers' carload lots, $1.85; retailers' carload lots, $1.90; with 30c for galvanizing; plain wire to jobbers in carloads, $1.65, and to dealers, in carloads, $1.70; polished staples, $1.85; galvanized staples, $2.15.

Wire Rods.—The wire rod market is practically unchanged. Specifications are probably slightly heavier than during the previous week, but there is little new business coming out. There has been no change in mill operations. We quote the market at $33 and $34, Pittsburg, on Bessemer and open-hearth rods.

Coke.—Aside from the meeting of independent coke producers of the Connellsville region for the purpose of discussing plans for the formation of a general selling agency, there have been no developments during the past week that would cause any change in the coke situation. The market is weak, prices are low, and the independents are still curtailing production. It is generally conceded, however, that prices are about as low as they are likely to go, and unless something unexpected occurs within the next week or so, it is believed that prices will be gradually advanced. Some producers believe that the market is already showing a stronger tone, but this opinion is not shared by all. Production this week is being curtailed about 20 per cent. At the meeting of independents in Pittsburg, on Feb. 19, plans for the proposed selling agency were discussed. Another meeting will be held within the next week or so, when details of the proposed organization will be decided upon. Producers, who are taking the lead in this movement, say it is proposed to have the association handle the entire output of about 6,000 ovens. This, they claim, is about 75 or 80 per cent of the standard grade coke produced by independents in the Connellsville region. This does not include the Rainey interests. While a few sales are being made at exceptionally low figures, we quote standard Connellsville furnace coke for prompt shipment at from $2.25 to $2.35, ovens, and on contract from $2.30 to $2.40. On high grade Connellsville foundry coke, we quote from $2.90 to $3, ovens, for prompt delivery. On contracts, we quote from $2.95 to $3.10. The Connellsville *Courier's* figures for the week ending Feb. 12 show 36,653 ovens active, with an output of 466,344 tons, compared with 36,859 active ovens and a production of 474,203 tons the previous week.

Old Material.—Most all grades of old material in the Pittsburg district show a still further decline in prices this week. Quotations at present are about the same as they were in November last, when prices began to advance. The market is without life, and few sales are being reported even at the lower quotations. Little material is being offered by producers to dealers, as they appear to be holding out for better prices. Heavy melting scrap can now be bought for from $16.75 to $17.25. Re-rolling rails are being offered at from $17.50 to $18, a reduction of 25 cents. A similar cut has been made in bundled sheet scrap, which now can be had at from $14.75 to $15.25. The new quotation on iron axles is $26.50 to $27, a reduction of 50 cents. No. 1 wrought scrap also shows a reduction of 50 cents. Corresponding reductions have been made on other grades. We quote, gross tons, delivered in the Pittsburg district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$16.75 to 17.25
Rerolling rails	17.50 to 18.00

Bundled sheet scrap	14.75 to 15.25
Iron axles	26.50 to 27.00
Old iron rails	18.00 to 18.50
No. 1 wrought scrap	18.00 to 18.50
Old car wheels	17.00 to 17.50
Low phosphorus	21.00 to 21.50
Machine shop turnings	12.00 to 12.50
Cast borings	9.50 to 10.00
No. 1 cast scrap	16.50 to 17.00
Malleable	16.00 to 16.50
Stove plate	12.50 to 13.00

CHICAGO.

Many Inquiries for Cars—Little Activity in Pig Iron.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Feb. 21.

The mixed condition which has existed in the iron and steel market for some weeks continues, but it is evident that the turn in affairs is very close at hand. The reported cancellation of orders which has emanated from sources interested in legislation really has amounted to a very small figure, and is nothing more than is to be seen at almost any season of the year.

Some of the railroads interested in and others closely associated with the speculative market are strongly suspected of waving the red flag of danger to attract attention to the cancellation of minor orders, while at the same time they quietly are going ahead and securing themselves in the matter of more important material. It is known that one of the important systems controlling lines in the west and northwest is quietly making arrangements for its summer supply of fabricated material. Car-building, which suffered a suspension of activity some time ago, shows signs of awakening, and inquiries for 40,000 new cars are appearing, of which the Baltimore & Ohio is credited with 10,000; Southern railway with 6,000, and the remainder made up of numerous orders of lesser quantities.

Pig Iron.—A few sales and very light inquiries, is the substance of the report from pig iron makers and sellers the past week. Of the inquiries which were noted in this report a week ago, a very small proportion resulted in actual business. While $13.50, Birmingham, seems to be the minimum for prompt delivery iron, there are rumors that this price has been shaded, at least a quarter of a dollar, but it can be said that the number of furnaces willing to consider a lower price than $13.50 is very limited and the shading of prices is doubtless due to the anxiety of speculative holders of iron to realize on their investment. The market seems to be in a condition where it is ready to respond to influences which would send it upward, although it is quite possible that the present quietness may continue and the market drag along until the bottom is reached at $13, Birmingham, which seems to be, under the present conditions, the lowest point which it is possible for the market to score, and the turn may come before that low point is recorded. It is stated that the 7,000 tons of re-sale iron which has been held in the Cincinnati district for some time has been taken out of the market by purchase, which will help matters in that vicinity. There seems to be absolutely nothing doing in this market in Lake Superior charcoal or local foundry irons, and the same may be said of Ohio irons. What buying has been done recently has been largely on the part of steel foundries and much of this iron went outside of the Chicago district. We quote:

Lake Superior charcoal	$19.00 to 19.50
Northern foundry No. 2	18.50 to 19.00
Southern foundry No. 2	17.85 to 18.35
Southern silveries, 5 per cent silicon	18.90 to 19.40
Jackson Co. silveries, 8 per cent.	22.40 to 22.90
Malleable Bessemer	18.50 to 19.00
Alabama basic	18.35 to 18.85

Merchant Bars.—Free specifying, with a fair amount of new business, is about the only thing which can be said of the market for the past week. There is no sign of any disturbing fear on the part of manufacturers that the present slackening in the pace of order receipts will be more than temporary, and to many the lull is more of a relief than a menace. In fact, in some quarters there is a little apprehension lest a revival in active buying should come before the mills have reduced the amount of unfilled tonnage on their books to a less unwieldy total.

We quote, for Chicago delivery, as follows:

Bar iron, 1.60c to 1.65c; hard steel bars, re-rolled, 1.60c to 1.65c; soft steel bars and bands and small shapes, 1.68c to 1.78c, base; hoops, 1.78c to 1.88c; planished or smooth finished tire steel, 1.88c to 1.93c; iron finish, up to 1½ by ½ inch, 1.83c base, tire card; iron finish, 1½ by ½ inch and larger, 1.68c, base, bar card; channels for solid rubber tires, ¾ to 1 inch, 2.18c, flat, and 1⅛ inches and larger, 2.08c, flat; smooth finished machinery steel, 1 inch and larger, 2.43c; flat sleigh shoe, 1.73c; toe calk steel, 2.23c; spring steel, 2.28c; crucible spring steel, 2.78c; tool steel, 7c to 9c, with higher prices for special grades. Quotations on shafting are 55 per cent off the list for carload lots, and 50 per cent off for less than carload lots, carload freight allowed to points in base territory.

On iron and steel bars from local stocks, we quote, as follows: Bar iron, 2c to 2.10c, base; soft steel bars, 1.90c to 2c per 100 pounds, base; soft steel hoops, 2.40c to 2.50c, full extras.

Structural Material.—About the most hopeful sign of the times comes from prospective structural contracts. Some of the railroads, realizing that a change in the feeling of buyers in general is beginning to be apparent, are making inquiries for summer fabrication, and this inquiry is expected to stimulate inquiry from other channels. The contract for the Avery building at Peoria, which was supposed to have gone to the Indiana Bridge Co., has been awarded to the Valentine Jobst Co., of Peoria; 1,200 tons will be required. The American Bridge Co. secured the contract for a viaduct at Sullivan's Gulch, Portland, Ore., 428 tons, and another at Proctor, Minn., for the D., M. & N. road, 189 tons; the Milwaukee Bridge Co. secured from the sanitary district commissioners, Chicago, the contract to supply 312 tons of structural material for the Sheridan road bridge and the Wilmette pumping station, for the North Shore channel.

We quote mill prices for structural shapes, Chicago delivery, as follows:

Beams and channels, 15-inch and under, 1.78c to 1.88c. For extras see Pittsburg report.

Local store prices are as follows: All angles, 3 inches and larger, including 6 inches, $2 to $2.10 per 100 pounds; angles over 6 inches, $2.10 to $2.20 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $2 per 100 pounds, base; channels, 3 inches and larger, $2 per 100 pounds, base.

Rails and Track Supplies.—A moderate amount of buying continues, the local rail mill booking about 7,000 tons during the past week, practically all being Bessemer. The Monon took 5,000 tons, and the remainder was made up of small orders. See Pittsburg report for prices on standard sections.

On light rails, Chicago delivery, we quote as follows: Light rails, 40 and 45-pound, $27; 30 to 35-pound, $27.75; 16, 20 and 25-pound, $28; 12-pound, $29.

Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.85c to 1.95c; smaller size spikes, 1.90c to 2c, base; track bolts with square nuts, 2.40c to 2.60c, base; with hexagon nuts, 2.55c to 2.75c.

Plates.—Some improvement may be reported, since the subsidence of the buying movement has enabled plate makers to see more clearly how they are going to come out, in the matter

of deliveries. By the time shipping departments have caught up on orders, it is confidently expected that new business in plenty will be in the market.

We quote, Chicago delivery, as follows: Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.78c to 1.88c. For extras see Pittsburg report.

Store quotations are without change as follows: Tank steel, ¼ inch and heavier, up to 72 inches wide, 2c to 2.10c; from 72 inches to 96 inches wide, 2.10c to 2.20c; 3-16 inch up to and including 60 inches wide, 2.10c to 2.20c; 72 inches, 2.35c to 2.45c; No. 8 up to 60 inches wide, 2.15c to 2.25c. Flange and head quality, 25c extra.

Sheets.—The same heavy demand for blue annealed sheets, resulting in the payment of premiums for prompt delivery, is not present in the market this week, but there is a steady inflow of small orders, in addition to the larger contracts, which represents a very respectable factor in the summing up of the current business.

For mill prices see Pittsburg report. Freight to Chicago, 18 cents.

We quote store prices at Chicago as follows: No. 10, 2.25c to 2.35c; No. 12, 2.30c to 2.40c; No. 14, 2.35c to 2.45c; No. 16, 2.45c to 2.55c; Nos. 18-20, 2.80c to 2.90c; Nos. 22-24, 2.85c to 2.95c; No. 26, 2.90c to 3c; No. 27, 2.95c to 3.05c; No. 28, 3c to 3.10c; No. 30, 3.30c; galvanized sheets, Nos. 10 and 16, 3.20c to 3.30c; Nos. 18 and 20, 3.35c to 3.45c; Nos. 22 to 24, 3.50c to 3.60c; No. 26, 3.50c to 3.80c; No. 27, 3.90c to 4c; No. 28, 4.10c to 4.20c; No. 30, 4.50c to 4.60c.

Wire Products.—An early spring, which is predicted to follow the prolonged and steadily severe weather of the past two and a half months, is relied upon to furnish a very decided revival of trade. There is a seasonable movement at the present time, and prices seem to be maintained by a majority of makers, although there is still said to be a little cutting of prices by some interests.

We quote, Chicago delivery, as follows: Wire nails, jobbers' carload lots, $2.03; retailers' carload lots, $2.08; retailers' less than carload lots, $2.18; painted barb wire, jobbers' carload lots, $2.03; retailers' carload lots, $2.03; retailers' less than carload lots, $2.18; with 30c for galvanizing; plain wire to jobbers, carload lots, $1.83; staples, bright, $2.03.

Merchant Pipe.—Sales agents are looking forward to a very good business in the spring and summer, and report that the volume of sales now current is satisfactory, considering the time of year. Out of store business is large, the demand for tubular goods from the building trades being especially encouraging. This branch of business is expected to take an increasingly large amount of pipe, as spring advances.

For mill discounts, see Pittsburg report.

We quote, out of store, as follows: Wrought steel pipe, black, ⅛-inch to ¼-inch, 68 per cent; ⅜-inch, 69 per cent; ½-inch, 72 per cent; ¾-inch to 6-inch, 76 per cent; 7-inch to 12-inch, 68 per cent. Iron pipe, about 6 points higher.

Lap-welded steel tubes, 2¾-inch to 5-inch, 60 to 62 per cent; charcoal iron tubes, 2¾-inch to 4-inch, 48 to 50 per cent, seamless steel tubes, 2¾-inch to 4-inch, 46 per cent.

Old Material.—A trifle better feeling is noted, although no deceded change has taken place in prices. No railroad lists have appeared for several days. We quote:

Old car wheels	$17.50 to 18.00
Old iron rails	18.00 to 18.50
Rerolling rails (4 ft. and over)	17.50 to 18.00
Old steel rails (2 ft. and under)	16.75 to 17.25
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	24.50 to 25.00
Frogs, switches and guards	15.00 to 15.50
Heavy melting steel	15.00 to 15.50
Shoveling steel	14.50 to 15.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$14.50 to 15.00
No. 2 R. R. wrought	13.50 to 14.00
Arch bars and transoms	17.50 to 18.00
Knuckles, couplers and springs	14.25 to 14.75
Shafting	17.50 to 18.00
Iron car axles	21.75 to 22.25
Steel car axles	22.00 to 22.50
Locomotive tires	18.00 to 18.50
Dealers' forge	12.00 to 12.25
Pipes and flues	11.25 to 11.75
No. 1 cast, 150 lbs. and less	14.50 to 15.00
No. 1 busheling	12.25 to 12.75
No. 2 busheling	9.50 to 10.00
No. 1 boiler cut	11.25 to 11.75
Boiler punchings	16.50 to 17.00
Cast and mixed borings	7.25 to 7.75
Machine shop turnings	9.75 to 10.25
Railroad malleable	14.25 to 14.75
Agriculaural malleable	12.50 to 13.00
Stove plate and light cast scrap	12.25 to 12.75
Angle bars, splices, etc. (iron)	17.25 to 17.75
Angle bars, stteel	14.75 to 15.25

CLEVELAND.

Reported Sales of Basic—Inquiries for Plates and Shapes.

Office of THE IRON TRADE REVIEW,
Browning Building, Feb. 21.

Iron Ore.—Selling of ore is proceeding very slowly at present, only occasional lots of 1,000 tons or so being disposed of. On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemeer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $5; Mesabi Bessemer, $4.75; old range non-Bessemer, $4.20; Mesabi non-Bessemer, $4.

Pig Iron.—Although sales agencies having representatives in other cities report considerable inquiry and a disposition to test the market, there is very little activity in this city. Rumors are being heard of sales of basic at Pittsburg as low as $15.50, valley. It is known, however, that furnaces are not quoting anything like as low as that, and it is believed that if such sales were made, they were on a trading basis, involving coal or coke, as in the case of the recent transaction between the Pittsburg Steel Co. and a prominent broker in Pittsburg in which billets were traded for pig iron. Not enough business in basic has developed to test the market. We quote, delivered in Cleveland, as follows:

No. 1 foundry	$17.00 to 17.75
No. 2 foundry	17.25 to 17.50
No. 2 Southern	17.35 to 18.10
Gray forge	17.15
Bessemer	18.90
Lake Superior charcoal	19.50
Jackson Co. 8 per cent silvery	21.55

Coke.—We note the sale of 20 cars of furnace coke at $2.25, but as low as $1.90 has been done within a few days. The market is very quiet. We quote foundry coke at $2.90 to $3 for prompt delivery, and $3 for first half. For prompt delivery, we quote Connellsville furnace coke at $1.90 to $2.25, and for first half $2.25 to $2.50.

Finished Materials.—Jobbers continue to do an excellent business, but mills are not receiving specifications in as large quantities as they did up to a few weeks ago. An inquiry for 2,000 tons of plates is pending, and makers of plates say that not less than 1.55c, Pittsburg, is being quoted. About 2,100 tons of plates and shapes will be required for a bridge to be erected in this county, and the new Swetland building, to be erected on Euclid avenue, east of Ninth street, will require 1,000 tons of shapes and bids will be called for soon. The structure will be 10 or 12 stories, and will have a steel frame with a large amount of concrete work. A northern New York railroad shop is in the market for 1,000 tons of bar iron. Cleveland makers of bolts and rivets recently advanced prices of the smaller sizes 5 per cent, and at a meeting held this week other manufacturers advanced their quotations to the same level.

Old Material.—There has been little trading in old materials here during the past week, although some sales of small lots are recorded from day to day. One of the largest consumers of old material in this district is reported to have said that it will resume buying in March. There have been no changes in prices since our last report. We con-

tinue to quote gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$18.00 to 18.50
Old steel rails (under 6 feet)	17.00 to 17.50
Old car wheels	17.00 to 17.50
Old steel boiler plate	14.00 to 14.50
Malleable iron (railroad)	16.00 to 16.50
Steel axles	20.00 to 20.50
Malleable iron (agricultural)	14.50 to 15.00
Heavy steel	15.00 to 15.50
Country mixed steel	13.50 to 14.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$16.00 to 16.50
No. 1 busheling	13.50 to 14.00
No. 1 machine cast	15.00 to 15.50
Axle turnings	11.00 to 12.00
Machine shop turnings	9.50 to 10.00
Grate bars	12.00 to 12.50
Pipes and flues	11.50 to 12.00
Tank iron	11.00 to 11.50
Sheet iron	6.50 to 7.00
Wrought drilling	9.50 to 10.00
Stove plate	13.00 to 13.50
Cast borings	8.00 to 8.50

NEW YORK.

All Materials are in a State of Moderate Activity.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., Feb. 22.

Iron Ore.—It is estimated that the shipping movement in February against foreign ore contracts other than those of Cuban and Newfoundland operations, has been scarcely more than one-third that of January when a large tonnage was brought in. The principal reason assigned for the falling off is the scarcity of boats, as it has become a more difficult task to charter even at advanced rates, the vessels being attracted to ports where more remunerative cargoes are available. Some interests are predicting that the chartering situation is going to play an important part in the delivery of the large tonnage of foreign ores bought by eastern furnace interests for this season. At the present time there is evidence of prospective ore shortage in the operations of some makers of low phosphorus pig iron. The advance in ore charters that has been going on for the past year is reflected in the recent rate of 20s 6d made on manganese ore from Bombay, compared with about 16s a year ago. One cargo of 5,000 tons of Spanish ore consigned to the Delaware River furnace, which recently suffered an accident causing it to be banked, was resold and this has given rise to enlarged reports of reselling of ore being done. There is little contracting in foreign ore at present and advices from abroad are to the effect that desirable first grades are scarce, continental buyers having contracted more freely. Some of the furnaces are still asking domestic ore interests in the east to hold back shipments because of operating troubles and embargoes.

Pig Iron.—There is no definite improvement to be recorded in the pig iron market. The large consumers are still exercising caution in closing upon any more of their forward needs than they are already covered upon, evidently waiting for the general business situation to become more clearly established. The smaller users are also playing the waiting game and are buying principally for their current needs. It is believed that a clearing up of some of the prevailing perplexity would be quickly followed by a buying movement, as the melt appears to be well sustained and shipments are going forward steadily. Pending inquiry about 15,000 tons is being acted upon very slowly, but some new tonnage is constantly coming up. A New Jersey machinery maker is asking prices on from 4,000 to 6,000 tons of foundry iron for first half. The 6,100 tons of the International Steam Pump Co. is slated for an early closing. Some development is holding up the formal award of the General Electric Co. for its Lynn plant and a part of its Pittsfield requirements, but this consumer has covered for Schenectady and a part of its Pittsfield needs as stated. Prices are largely stationary, except low phosphorus, which is easier. A small tonnage of off cast low phosphorus was recently sold at $21.40, delivered. Selling has been done at $21, eastern Pennsylvania furnace. The Virginia range continues $15.25 to $15.50 for No. 2X for first half. New business going to these makers from this territory is light. Eastern Pennsylvania furnaces are still asking $18 for No. 2X, but are doing $17.50 for desirable business. There is very little activity in southern iron in the eastern market. We quote, delivery at New York tidewater over the first half, as follows:

Northern foundry No. 1	$19.00 to 19.50
No. 2X foundry	18.50 to 19.00
No. 2 plain	18.00 to 18.50
No. 2 southern foundry	18.25 to 18.75
Malleable	19.25 to 19.75
Gray forge	17.00 to 17.50

Ferro-Alloys.—Reports of suspended shipments upon ferro-manganese contracts are exaggerations, although one instance is noted of held-up tonnage for second quarter. Generally the rule is that users are demanding material as promptly as they can get it. The market shows little new development in inquiry and sales are mainly in carload lots. There are some soft spots to price conditions. An Ohio steel interest, which had out an inquiry for from 1,000 to 2,000 tons for second half, evidently found the market less weak than it had believed, and has temporarily decided not to buy. Standard ferro-manganese is quoted at from $43.50 to $44, seaboard, and 50 per cent ferro-silicon at from $60 to $61, seaboard.

Cast Iron Pipe.—A slowness in municipal undertakings is still affecting the market, although the private contracting is fair. New inquiry which came out the past week includes 700 tons of 6 to 20-inch pipe for New Brunswick, N. J., and about 750 tons for Cuban shipment.

Old Material.—Local demand for scrap materials about New York is light, as consumers appear to be well covered for their needs. The ban upon shipments to eastern Pennsylvania consumers is contributing materially to keep the market stagnant and there appears to be plenty of tonnage awaiting a destination. Where embargoes have been temporarily raised, such a rush of shipments upon the consumer has followed that their immediate re-establishment has been necessitated. Prices are easy and are inclined to be softer. Buying is largely against short sales. We quote, gross tons, prices which New York dealers will pay at tidewater, as follows:

Old steel rails (re-rolling)	16.00 to 16.50
Old car wheels	15.00 to 15.50
Old iron car axles	23.00 to 24.00
Old steel car axles	19.50 to 20.00
Heavy melting steel	14.50 to 15.00
No. 1 railroad wrought	17.50 to 18.00
Iron track scrap	15.00 to 16.00
Wrought pipe	13.50 to 14.00
Cast borings	9.50 to 10.00
Wrought turnings	12.00 to 12.50
Heavy cast scrap	15.00 to 15.50
Railroad malleable	15.00 to 15.50
Stove plate	11.50 to 12.00
Grate bars	11.75 to 12.25

CINCINNATI.

Pig Iron Prices Soft With Very Little Business.

Office of THE IRON TRADE REVIEW, N. E. cor. Fourth and Elm Sts., Feb. 21.

Pig Iron:—The market shows signs of being softer in a general way, and inquiry is extremely light. The consensus of opinion appears to be that $14.00, Birmingham, is the prevailing furnace quotation, with no record of any sales at this figure. Several of the furnaces which are said to have large stocks of iron on yards, and few orders on books, are reported as having shaded this quotation for nearby delivery. During the week, some tonnage has been offered by furnace companies direct as low as $13.25, and several thousand tons of resale iron on warrants for prompt shipment are said to have sold as low as $13.00. It is thought, however, that the bulk of this resale iron has now been disposed of. As a general proposition, southern quotations now appear to be from $13.50 to $14.00 Birmingham, with very little new business coming

out at any figure. Northern brands are quotable at $17.00 Ironton furnace, and while showing perhaps more firmness than southern, there are rumors that this has been shaded on business for early delivery. There is an inquiry from a northern Ohio melter for 400 tons Bessemer for early delivery, one for 1,000 tons silvery delivery covering last half, and one from a Michigan concern for 1,500 tons divided between malleable and foundry grades, delivery running through March, April, May and June. One of the leading pipe industries is said to be in the market for a round block of No. 4 foundry. We quote for any delivery during the year based on freight rates of $3.25 from Birmingham and $1.20 from Ironton as follows:

Southern fuondry No. 1	$17.25 to 17.75
Southern foundry No. 2	16.75 to 17.25
Southern foundry No. 3	16.25 to 16.75
Southern foundry No. 4	16.25 to 16.75
Southern No. 1 soft	17.25 to 17.75
Southern No. 2 soft	16.75 to 17.25
Southern gray forge	16.00 to 16.50
Northern No. 1 foundry	18.70
Northern No. 2 foundry	18.20
Northern No. 3 foundry	17.70
Jackson county 6 per cent silicon	20.20
Jackson county 8 per cent silicon	21.20
Jackson county 10 per cent silicon	22.20

Coke:—The market is quiet, and very little new contract business is being booked. One sale of a round block of Wise county furnace coke for prompt shipment is said to have been sold at about $2.00 ovens. There has been some delay to shipments incident to the deep snow over mountain districts, but otherwise contracts are moving fairly well. Prices are easy and weak, and in the leading coke producing destricts are as follows:

	Prompt shipment.	First half 1910.
Connellsville District:		
Foundry coke	$2.75 to 3.00	$2.75 to 3.00
Furnace coke	2.00 to 2.25	2.30 to 2.40
Wise county district:		
Foundry coke	2.75 to 3.00	3.00 to 3.25
Furnace coke	2.10 to 2.25	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.75 to 2.90	2.85 to 3.10
Furnace, coke	2.50 to 2.75	2.75
New River:		
Foundry coke	2.75 to 3.00	2.90 to 3.25
Furnace coke	2.25 to 2.50	2.35 to 2.50

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16⅔ per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material:—The mills are still from two to three months behind in deliveries, and new specifications are coming forward slowly. Locally, there is nothing in the way of new structural demand to speak of. Agents are caring for customers in as liberal manner as possible, and shipments are fairly satisfactory. Steel bars and small shapes sold on steel bar card are quotable at 1.50c, base Pittsburg, and plates and structural 1.60c net Pittsburg.

Old Material:—There are no new developments in the scrap iron situation and the market continues quiet and inactive. Dealers are complaining of the utter absence of anything like life, and have considerable trouble in disposing of their metals satisfactorily. Prices are irregular and weak. We quote dealers' prices as follows:

No. 1 railroad wrought, net tons	13.50 to 14.00
No. 1 machinery, net tons	13.50 to 14.00
No. 1 busheling, net tons	11.50 to 12.00
Old iron rails, gross tons	18.00 to 18.50
Old steel rails (rerolling), gross tons	17.00 to 17.50
Old short lengths, gross tons	15.00 to 16.00
Old iron axles, net tons	19.00 to 19.50
Heavy melting scrap, gross tons	12.50 to 13.00
Stove plate, net tons	10.00 to 10.50
Heavy turnings, net	9.50 to 10.00
Cast berings, net tons	7.00 to 7.50
Car wheels	15.50 to 16.00
Grate bars	11.00 to 12.00

PHILADELPHIA.

Fundamental Pig Iron Conditions Sound—Scrap Association Continues.

Feb. 21.

Pig Iron.—The state of moderate activity in pig iron buying in this territory, now in force, can scarcely be attributed to any underlying factor other than the timidity of consumers to anticipate their needs because of doubt as to the real condition of general business affairs. That basic conditions are sound as respects the maintenance of the recent rate of consumption is shown by the report of furnace stocks and sales made at the monthly meeting of the Eastern Pig Iron Association last week. The tonnage on furnace yards as related to the orders booked showed a change of less than 1 per cent over the condition disclosed at the previous month's meeting. The general belief expressed by furnacemen is that buyers, with the exception of the leading basic users which have bought more heavily in proportion, will be forced into the market within a short time for their second and third quarter requirements which have only been partially covered at best. The past week has seen only a very ordinary tonnage placed under contract. The pipe companies of this district probably took the largest total, about 5,000 tons of low grade iron. These interests have been buying steadily each week for some time, taking in prompt material. There has been the usual selling of small lots of northern and Virginia No. 2X foundry at from $18.25 to $18.50, delivered; while for shipment beyond the second quarter, higher prices have been obtained. A few small sales of low phosphorus iron are reported. This market appears a little easier, a condition in which some recent foreign importations have figured although the strictly standard domestic brands are closely held. Little demand for forge is to be noted. Tonnages of basic offered to eastern works this week found no takers. No additional sales of steel-making metal are reported. The Reading Iron Co. has put out one of its furnaces for repairs and the Thomas Iron Co. will shortly cut down its operations by one stack, for relining. We quote for Philadelphia delivery, first half, as follows:

No. 1X foundry	$19.00 to 19.50
No. 2X foundry	18.50 to 19.00
No. 2 plain	18.00 to 18.50
Standard gray forge	17.00 to 17.25
Basic	18.50 to 18.75
Low Phosphorus	22.75 to 23.25
No. 2 Birmingham	18.50
No. 2X Virginia	18.25 to 18.50
No. 2 plain, Virginia	17.75 to 18.25

Finished Materials.—Large steel makers take the position that actual conditions in the finished market are stronger than they are taken to be in the general commercial uncertainty. While admitting that new bookings and specifications in some lines are falling a little behind capacities, the mills are reported to be so filled up that they can afford to wait any reasonable length of time for the broadening of the buying movement. Some concessions have been made with poor results, to bring out pending business and the conviction is spreading that the market is passing through a transitory stage, and that low prices will not stimulate the process. Railroad buying is still an important missing factor. Current specifications in steel bars are heavy but deliveries in plates and shapes with the largest makers are gradually becoming more prompt. Eastern plate makers declare they are not meeting any reported low prices and are asking a minimum of 1.60c, mill. Shape prices are still easy but some makers report they are holding strictly to schedules. The Fairmount Hotel job, this city, 1,500 tons, for which bids have been taken, is still hanging fire, but it is understood a Boston contractor has entered the lowest figure. The Jones & Laughlin Steel Co. has taken the Pennsylvania railroad's train sheds at Baltimore, 1,200 tons. Other work is still pending. New inquiry is only fair. Bar iron is weak and operations of some of the eastern mills are becoming more and more irregular. Some low quotations are reported. There is sharp competition for business in standard spikes and recent selling has been done on a basis of 1.65c, Pittsburg. We quote the following upon finished material for Philadelphia delivery: Structural shapes, 1.65c to 1.75c; plates, 1.65c to 1.75c,

steel bars, 1.60c to 1.65c; refined bar iron, 1.60c to 1.65c; open-hearth 4 x 4 billets, $30, eastern mill.

Old Material—The rumor that a serious disagreement has broken out in the ranks of the associated mills and that the arrangement has been practically discontinued is authoritatively denied. The allied plants are not making any new contracts for steel at present as embargoes continue upon many plants, but it is stated that their positions relative to the general plan of buying are unchanged. The embargo situation has not been greatly modified and shipments are still restrained to a number of important consuming points. The Bethlehem Steel Co. has raised its ban partially to apply to borings. Probably 10,000 tons of foreign scrap, largely crop ends and bundled sheet material, was received at their Philadelphia port this week, and considerable of it went to the plants of the associated buyers. This material applies upon engagements made some time ago, as at present the relative positions of the continental and the American markets are prohibiting any new contracting from this side. Some of the iron mills are closing down because of light business and wrought scrap is dull. The general tone of the market is weak and prices fixed largely by the buying of dealers short upon sales, are lower. We quote, gross tons, Philadelphia delivery, as follows:

Old steel rails (rerolling)	$17.75 to 18.25
Heavy melting steel	15.50 to 17.00
Old car wheels	16.50 to 17.00
Old iron car axles	26.00 to 27.00
Old steel car axles	22.50 to 23.00
No. 1 railroad wrought	18.50 to 19.00
Wrought pipe	16.00 to 16.50
Cast borings	11.00 to 11.50
Wrought turnings	13.00 to 13.50
Heavy cast scrap	16 00 to 16.50
Railroad malleable	16.50 to 17.00
Stove plate	12.50 to 13.00

BUFFALO.

Foundries Busy—Little Buying of Pig Iron or Finished Material.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Feb. 21.

Pig Iron.—The closing days of the second month seem certain of being characterized by a quiet market. While prices on the foundry grades rule firm as quoted below, there is little inquiry for large tonnage, and most of the smaller consumers show a tendency to delay placing orders covering their needs for the last half. There are so many reasons advanced for the present situation that it is difficult to indicate which is of the most importance. Here it seems to be more of a reaction from heavier buying of the past. It is certain that heavy tonnages will be needed by many of the leading interests shortly and there seems little reason to believe that prices will soften any further for the present. The increased activities of foundry interests at this point would bear out the theory that the pig market will hold up well. Foundries in Buffalo and Western New York are practically all running full capacity, a condition they have not enjoyed for two years. We quote f. o. b. furnace as follows:

No. 1X foundry	$17.50 to 18.00
No. 2X foundry	17.00 to 17.50
No. 2 plain	17.00 to 17.25
No. 3 foundry	16.75 to 17.00
Gray forge	16.75 to 17.00
Malleable	17.50 to 17.75
Basic	18.00 to 18.50
Charcoal	20.00 to 21.00

Finished Material.—This market is quieter than at any time since last September. Specifications are coming on very slowly and there is no new business of any special interest reported here. Mills are said to be fully as far behind on deliveries as previously reported and prices on finished products are unchanged. The lull felt here, while rather acute, is not believed to have any special significance or influence on the general situation.

Old Material.—The quiet condition which has ruled so persistently in the scrap market continues unabated. The recent sales represent only small lots and the consumers of heavier tonnages are still absent from the market. We quote merely nominal prices on gross tons f. o. b. Buffalo, as follows:

Heavy melting steel	$16.50 to 17.00
No. 1 railroad wrought scrap	18.00 to 18.50
No. 1 railroad and machine cast scrap	16.50 to 17.00
Old steel axles	21.00 to 21.50
Iron axles	26.00 to 26.50
Car wheels	18.00 to 18.50
Railroad malleable scrap	16.50 to 17.00
Machine shop turnings	11.25 to 11.75
Cast iron borings	9.25 to 9.75
Low phosphorus steel scrap	20.00 to 21.00
Old iron rails	19.00 to 20.00
Tank iron	13.50 to 14.00
Sheet iron	9.00 to 9.50
Stove plate	13.50 to 14.00
Pipe and flues	13.50 to 14.00
Grate bars	12.00 to 12.50
Boiler plate	14.00 to 14.50

ST. LOUIS.

Southern Pig Iron Market in Flutter—Large Basic Inquiries.

Feb. 21.

Pig Iron.—The sale last week of 2,500 tons of southern No. 2 through Cincinnati dealers to the Sanitary Mfg. Co. for use in its Louisville (Ky.) plant, at a figure hovering close to $13, Birmingham basis, has put the pig iron market on the qui vive in the St. Louis territory, and local agents are wondering if a still lower price will not be made in the near future.

The inquiries for 30,000 to 40,000 tons of basic that two large St. Louis plants have had in the markets several weeks have not been withdrawn, and the inquirers hold to the belief that they will be able to buy on something like their own terms.

Local agents insist that $14 is the lowest price obtainable from a furnace, but freely admit that plenty of resale iron can be had for $13.50, $13.25 and some as low as $13, for immediate shipment. The sale to the Sanitary Mfg. Co. was for March and April delivery.

It is estimated that upward of 2,500 tons, nearly all gray southern iron, were sold in the St. Louis territory last week, exclusive of the Cincinnati deal.

Ohio iron is quoted at $16.75 to $17, Ironton, for any delivery. The lower price probably more accurately represents the market.

Our price of southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follows:

No. 1 foundry	$17.50 to 17.75
No. 2 foundry	17.25 to 17.50
No. 3 foundry	17.00 to 17.25
No. 4 foundry	16.25 to 16.50

One sale of No. 4 southern iron is reported to have been made last week at slightly less than $16, delivered, but this was not confirmed.

Coke.—The market, so far as buying is concerned, is virtually at a standstill. Prices are as follows: Connellsville 72-hour foundry, $3 for prompt and $3.25 for last half delivery; Connellsville 48-hour furnace, $2.75 to $3; Virginia 72-hour foundry, $3 for prompt and $3.25 to $3.50 for delivery over the last half; Virginia 48-hour, $2.75 for prompt and $3 for last half delivery.

Old Material.—Not a single transaction worthy the name of sale was reported last week. Prices are merely nominal, and nobody seems to know what is correct. We quote as follows, but it is freely admitted that better figures could be obtained should a real live purchaser appear:

Old car wheels	$17.00 to 17.50
Old iron rails	19.00 to 20.00
Rerolling rails (4 ft. nad over)	16.75 to 17.25
Old stel rails e(2 ft. and under)	16.50 to 1.00
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	24.50 to 25.00
Frogs, switches and guards	15.50 to 16.00
Heavy melting steel	15.50 to 16.00
Shoveling steel	14.00 to 14.50

We quote, net tons, as follows:

No. 1 R. R. wrough t	$14.50 to 15.00
No. 2 R. R. wrought	13.50 to 14.00
Arch bars and transoms	17.50 to 18.00
Knuckles, couplers and springs	15.00 to 15.50
Shafting	17.00 to 17.50
Iron car axles	20.00 to 21.00
Steel car axles	20.00 to 21.00
Locomotive tires	18.00 to 18.50
No. 1 country wrought	12.25 to 12.75
Pipes and flues	11.75 to 12.00
No. 1 cast 150 lbs. and less	14.00 to 14.50
No. 1 busheling	13.00 to 13.50
No. 2 busheling	9.75 to 10.25
No. 1 boiler cut	11.50 to 12.00
Boiler punchings	13.00 to 14.00
Cast and mixed borings	7.50 to 8.00
Machine shop turnings	10.00 to 10.50
Railroad malleable	13.25 to 13.75
Agricultural malleable	11.50 to 12.00
Stove plate and light cast scrap	11.50 to 12.50
Angle bars, splices, etc. (iron)	17.25 to 17.75
Angle bars, steel	15.50 to 16.00

BIRMINGHAM, ALA.

Rumors of Low Prices of Iron Cannot be Confirmed by Sales.

Feb. 21.

Pig Iron.—Many rumors have been afloat the past week bearing on the base price of foundry iron as far as Alabama producing interests are concerned. It was whispered that certain brands—mainly high phosphorus iron—were being offered as low as $13 per ton at the furnace, and certainly as low as $13.50 per ton. A 10,000-ton lot was reported sold to a large buyer, but so far there is not sufficient reliable information in hand to confirm the report. In fact, the purchasing agent for the concern accredited with having placed the order is reported as having denied the purchase of any southern iron at all recently. Up to the present writing, practically every Alabama producing interest states most positively that the base price being maintained by them is $14 per ton at the furnace. Sales are being made on this basis, though no round tonnage lots. Some resale iron has been disposed of at even lower figures—from 25c to 50c per ton. We were talking with a prominent pig iron salesman, who is just off the road from an extended southern trip, and he reports that every plant he visited on his rounds was running full time, and a good, steady melt obtained. This clearly demonstrates that while users of iron are making big inroads on their pig supply, there is a certain feeling of unrest which keeps them from covering farther ahead. Southern charcoal iron is reported firm at $22 to $22 50 per ton at the furnace.

Cast Iron Pipe.—The heavy pipe market has undergone practically no change the past week. Local manufacturers report good business in hand, and inquiries fair. No material change is looked for until there shall have been a decided improvement in weather conditions. Small lots come up for letting, but larger business is not active. Following prices are quoted, per net ton, f. o. b. cars here: 4-inch to 6-inch, $24; 8-inch to 12-inch, $22; over 12-inch, average of $20, with a dollar a ton extra for gas pipe.

Old Material.—Dealers in scrap report about the same conditions that have existed for the past several weeks. Quite a little scrap is being piled for the reason that dealers are not willing to submit to cuts in prices that seem necessary to move the material. Following prices are quoted, per gross ton, f. o. b. cars here:

Old iron rails	$15.50 to 16.00
Old steel axles	17.50 to 18.00
Old iron axles	19.50 to 20.00
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	12.00 to 12.50
Dealers' wrought	12.00 to 12.50
Old steel rails	12.50 to 13.00
No. 1 machinery	12.50 to 13.00
No. 1 steel	13.00 to 13.50
Light castings, stove plate	9.50 to 10.00
Cast borings	6.00 to 6.50
Old standard car wheels	13.50 to 14.00

The open-hearth furnaces of the Southern Iron & Steel Co., at Alabama City, have been fired, preparatory to going in for the purpose of accumulating some stock. The wire, rod and nail mill, under present arrangement, will probably be ready for operation April 1.

BRITISH IRON MARKET.

Pig Iron Prices Firm and Confidence Seems to be Increasing.

Office of THE IRON TRADE REVIEW,
Birmingham, England, Feb. 10.

The pig iron trade exhibits remarkable firmness, in view of the somewhat discouraging reports from America. There has been a slight giving way in prices, but the amount is almost negligible. The selling figure yesterday for warrants was 51s 2½d ($12.53) and 51s 5½d ($12.59) one month. On the whole, there is more inclination to do business than was the case last week. Apparently, confidence is increasing. The Board of Trade returns, showing a very decided improvement, are giving great encouragement, but the material fact is that makers are very well booked, and can afford to wait for orders. There is a little more disposition to speculate, but a much less cheerful feeling as to prospective American business. A good sign is a marked decrease in the amount of iron going into stock, the total addition to Connel's stores for the first week in February being only 1,214 tons. The hematite market in Middleboro continues firm with mixed numbers at 65s ($15.90), but there is a good deal of grumbling, on the ground that, it is said, such a figure yields no profit whatever to the ironmaster at the present price of raw material. An early rise in price is considered inevitable. On the other hand, coke is a shade easier and there are now ample supplies.

Finished Department.—In the finished trade department, the most important event is the decision by a meeting of Lancashire ironmasters yesterday at Manchester to advance the price of iron bars by 5s per ton, making the standard £6 15s. A special feature at present is the great firmness of billets. This is largely due to the steady increase in foreign prices, especially in Germany. The minimum price now for these billets is 95s, which means that they cannot be deposited at any British center of consumption under 105s, and they are therefore practically off the market, as English makers now quote 105s. It is just possible that a few makers will be willing to accept slightly lower figures, but such possibilities are rare.

METAL MARKETS.

ST. LOUIS.

Feb. 21.

Lead and Zinc.—Choice lots of zinc blende sold for $42.50 in the Missouri-Kansas-Oklahoma district last week, which was $2.50 lower than better than 60 per cent grades brought the week before. The basic price ranged from $38 to $40 a ton for 60 per cent ores, as compared with from $36 to $42 the previous week. The general tone of the market was firm, with an average price of $37.89, as compared with $39.95 a week previous. St. Louis spelter was quoted at $5.35, Saturday. Calamine brought a top price of $28, the basic price ranging from $19 to $24, with an average price of $23.88.

The highest price reported for lead was $53 a ton, as compared with $55 during the first part of the previous week. The quotation on St. Louis pig lead was $4.40, or 15 cents less than for the previous week. The average price was $53.08 a ton. It is estimated that there is a surplus of 10,000 tons of zinc ore in the district, about the same amount that has been noted for several weeks. Some of the smaller operators have suspended work temporarily because of low prices and bad weather.

NEW YORK.

Feb. 21.

Copper.—Some business seems to be under way, but it is being done so quietly that, to all appearances, the market is duller than ever. This takes the form of sales to domestic consumers. The principal ones are paying 13.37½c net cash for electrolytic and 13.62½c for lake. Abroad, there is a little better feeling and quite a little more buying. In a speculative way, too, the buying there shows an improvement. The exports continue heavy and so far this month nearly 20,000 tons have been exported.

Pig Tin.—Prices of tin continue to advance notwithstanding that con-

sumers are not buying, or at least are buying only in such lots to tide them over for the present. It is reported that the leading consumer has again been purchasing, but this seems doubtful. The price today is easier than last week, and tin can now be had at 33.25c. The arrivals are large. Nearly 1,000 tons came in today and the total since Feb. 1 amounts to 3,238 tons. There are afloat for American ports, 3,282 tons.

Lead.—A feature of the week is a large shipment being made by the American Smelting & Refining Co. The price of this interest is now 15 points above competitors, but metal now being shipped was bought on old contracts. For shipment from the West to be delivered in the near future, lead can be had at 4.55c, New York, and 4.40c, St. Louis. The price of the leading interest, as inferred, is unchanged at 4.70c.

Spelter.—The market continues very easy and little or no business is attracted by the low figures. Offerings have been made at 5 37½c St. Louis. These were not taken. This corresponds to a price of 5.50c to 5.55c, New York. Brass mill special is in a little better demand, but is likewise weak.

Antimony.—The market is absolutely without change. Cookson's can be had at 8.50c, and Hallett's at 8.37c.

CHICAGO.

Feb. 21.

New Metals.—There has been no increase in the inquiry for new metals, and the feeling has been weak. Interests outside of the combinations are offering metals at shaded prices, but little buying is reported. Prices as quoted below are largely nominal. We quote as follows: Lake copper, carload lots, 14⅛c to 14¼c; casting, 13⅝c to 13¾c; smaller lots, ¼c to ⅜c higher. Spelter, 5.55c to 5.60c; lead, desilverized, 4.65c to 4.70c, in 50-ton lots, corroding 25c per 100 pounds higher; sheet zinc, $7.50 list f. o. b. La Salle in car lots of 600-pound casks; pig tin, 33¾c to 34c; Cookson's antimony, 10½c; other grades, 9¾c to 10¼c.

Old Metals.—Free offerings of material, with light inquiry, have combined to produce a heavy condition in the scrap metal market, without a quotable change in prices, which are given below as nominal.

We quote, dealers' selling prices, as follows: Copper wire, 13½c; heavy copper, 13½c; light copper, 11½c; heavy red brass, 13c; heavy yellow brass, 10¼c; light brass, 7½c;; No. 1 red brass borings, 10½c; No. 1 yellow brass borings, 8c; brass clippings, 9½c; tea lead, 3.80c; lead scrap, 4½c; zinc, 4¼c; tin pipe, 31c; tin foil, 29c.

JONES & LAUGHLIN STEEL CO. FORCES MEET.

The annual meeting of general and district sales agents of the Jones & Laughlin Steel Co. was held at headquarters in Pittsburg, Feb. 17-19. In addition to the regular business sessions, the agents inspected the new plant being built at Aliquippa, Pa., and on Friday inspected the South Side, Pittsburg, works. Thursday night the company entertained its guests at a theater party, and a smoker was held at the Duquesne Club Friday evening. President B. F. Jones Jr. presided at the business meetings. The agents from out of town, who attended the meeting, were: D. D. Barker, Chicago; H. F. Holloway, New York; R. M. Kilgore, Cleveland; G. C. Fogwell, Philadelphia; T. E. Miller, Chicago; C. N. Dannals, Atlanta, Ga.; F. H. Holt, Detroit; F. A. Goodrich, St. Louis; W. M. Armstrong, St. Louis; C. S. Bradley, Buffalo; Boyden Kinsey, Cincinnati; R. E. Williams, Chicago; A. B. Marble, Boston; William Best Jr., California, and E. S. Barker, Chicago.

WILL COMMENCE MAKING IMPROVEMENTS.

Seattle, Feb. 17.

The Great Northern Railway will commence at once improvements on its western division shops at Hillyard, near Spokane, Wash., aggregating $500,000. Additional facilities will be provided for the car shops and locomotive repair shops. Arrangements are being made for most of the machine tools which will be required, these tools having been included in the Great Northern list which was published in THE IRON TRADE REVIEW Feb. 3.

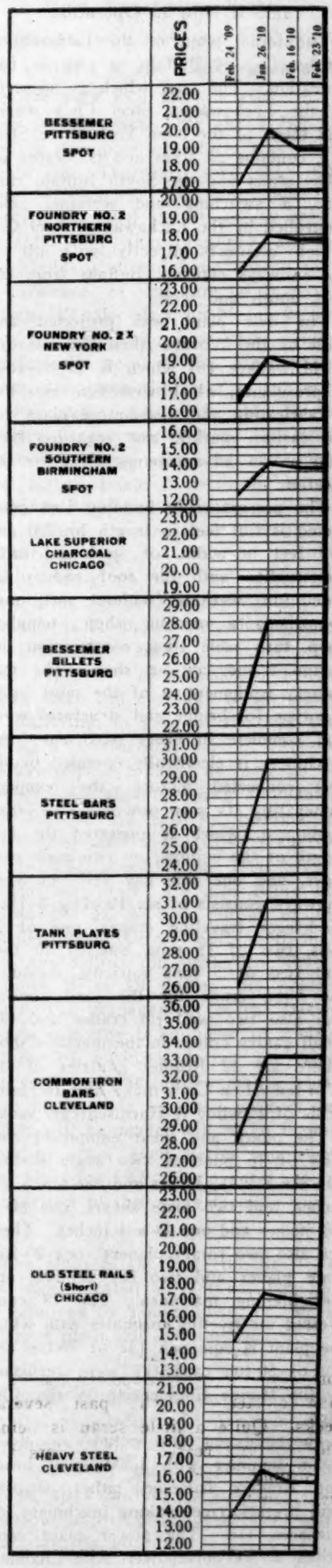
DELAYED PIG IRON ARRIVES.

Seattle, Feb. 17.

With a delayed cargo of English pig iron consigned to Puget Sound the French bark Duc d'Aumale arrived in Seattle, Feb. 17. The vessel, which came via Hobart, Tasmania, was 203 days from Newcastle, or about 50 days longer than usual. All but a few hundred tons of the cargo of pig iron is sold.

Union iron molders and coremakers employed in Cleveland are discussing a proposed new wage rate, slightly in advance of the old scale, which they propose to submit to Cleveland foundrymen upon the expiration of the present contract.

PRICE CHART.



NEW PLANT

Of the Lackawanna Bridge Co. at Buffalo is Now in Operation.

The initial plant of the Lackawanna Bridge Co., of Buffalo, is now in full operation. The site, which is adjacent to the Lackawanna Steel Co.'s works and those of the New York State Steel Co., contains 23 acres and is located on Abby street and the South Buffalo railway, a switching and terminal road controlled by the Lackawanna Steel Co., which connects directly with all of the railways entering Buffalo from the east, south and west.

The new plant was projected and built by the Worden-Allen Co. interests in Milwaukee (of which B. L. Worden is president), which wished to establish a fabricating and distributing plant for the eastern markets and regarded Buffalo as an advantageous point for its location.

The present main building just completed is 610 feet in length by 200 and 250 feet in width, of steel and brick construction with tile roof and is divided into sections (without partitions) comprising a machine shop; template shop, turn table shop, construction department and lay out shop. The machinery equipment is of the most modern type for bridge and structural work and complete in every particular. All machinery is electrically operated by direct connected motors; the company generating its own power. The crane equipment, which is operated the full length of the building on two main runways, and one side bay and one yard runways, consists of six Pawling & Harnischfeger traveling cranes, one of 20 tons, two of 15 tons, one of 10 tons and two of 5 tons capacity, including the 5-ton crane for the yard runway and also two wall jib cranes and two small gantry cranes in the machine shop. There are 12 Reamer gantries of the Worden-Allen Co.'s make and 16 radial drills of Pawling & Harnischfeger make.

The punch and shear equipment consists of 16 punches, two angle shears; one 8 x 8 x 1¼ inches and one 6 x 6 x 1 inches, and two plate shears, one 60 x 1¼ inches and one 48 x 1 inches. There are also two rotary planers; one 20-foot plate planer and two bar bending and straightening machines. The 18 compressed air riveting machines with which the plant is equipped (12 of 70-ton and six of 50-ton capacity) were furnished by the Hanna Engineering Works, Chicago.

The equipment also includes one Lane steam hammer with 1,500-pound head; one Bradley hammer, lathes, shapers, drill presses, rivet-making machinery, oil furnaces, etc. The power plant comprises a 500-horsepower Allis-Chalmers Corliss type engine; a Bullock generator, direct connected, carrying 240 volts; a Nordberg two-stage air compressor, cross compound 12 x 20 x 36 inches—110 pounds air pressure at receivers, two boilers and all the accessories of an up-to-date power plant.

The company has already booked and is working on a number of important contracts. It will carry at its plant a stock of plates and shapes of about 5,000 tons. This is a new feature for the Buffalo district, the carrying of warehouse stock of structural material, it having been heretofore supplied from Pittsburg and Cleveland.

W. A. Hazard is manager of the plant and A. Freiburger general superintendent. The officers of the company are: B. L. Worden, president; J. P. Nicholas, vice president; F. H. Bottum, assistant secretary.

Jason Paige is contracting engineer, with offices at 50 Church street, New York.

The general offices of the company are at 626-628 Fidelity building, Buffalo, N. Y.

CEMENT SHOW AT CHICAGO.

The third annual cement show, under the management of the Cement Products Exhibition Co., opened its doors at the Coliseum, Chicago, on Feb. 18, and has been attended by large crowds. Besides machinery and processes connected with the manufacture of cement and concrete, in their numberless ramifications, there are a number of exhibits of steel and wire re-inforcement for concrete construction, including deformed bars, expanded metal, etc. The exhibition will continue until Feb. 26, inclusive.

STRUCTURAL CONTRACTS.

Chicago, Feb. 22.

The Downs building, at Denver, 400 tons, went to M. J. Patterson, of that city. Bids are in, and the contract will be let in a day or two, for 350 tons of structural material for the Old Men's Home, in this city, which recently was provided for in the will of a Chicago philanthropist.

The plant and land of the Cowing Engineering Co., in Collinwood, O., were recently purchased by the Citizens Savings & Trust Co., Cleveland, for $113,325. The bank is liquidating trustee for the Commercial Savings & Trust Co., to which the Cowing Engineering Co. was indebted.

The trustees of the Great Northern ore properties, have directed that a distribution of 50 cents a share be made on March 15 to holders of permanent certificates of beneficial interest.

ADOPTS NEW NAME.

Organization of Company to Succeed Bird Iron Co.—New Virginia Concern.

Ironton, O., Feb. 21.

The objections of stockholders having been withdrawn, the sale of the Bird Iron Co. property to D. C. Davies, of this city, was confirmed by the court, and Mr. Davies and his associates, Col. H. A. Marting, Eaton, Rhodes & Co., of Cincinnati, and others, have assumed charge. In confirming the sale, Judge Corn increased the bond of Receiver H. R. Browne from $10,000 to $40,000, and ordered the liquidation of several of the claims, principally those of the First National bank of Ironton for $14,000, and Fieser & Bentley, of Columbus, for $18,000. The new company incorporated Friday as The Lawrence Iron Co., with an authorized capital of $250,000, and an organization is expected within the next few days. James Ferguson, who has been managing the Rogers-Brown furnaces here since the death of Charles Peters, will manage the new plant, which will, it is understood, make a specialty of basic iron.

The Hanging Rock Iron Co. lost about two days' production recently on account of the breaking out of the iron from the stack. Fortunately no one was injured and the loss was confined to the cast and the necessary suspension until repairs could be made.

At the Frederick hotel in Huntington, W. Va., last week, the reorganization of the Independent Steel Co. of America was effected by the new owners, John C. C. Mayo and associates. The following officers were named: President, John C. C. Mayo, Paintsville, Ky.; vice president, Hugh Hagen; treasurer, G. A. Northcott, Huntington, W. Va. The men principally interested in this concern, which absorbed the new steel plant at Kenova, W. Va., are principally Huntington business men and coal and timber operators in West Virginia. The plant will be operated at once. It has 585 men employed.

C. M. Trivett, formerly associated with Rogers, Brown & Co., will hereafter represent Nash, Isham & Co., pig iron and coke, New York, and will be located in Philadelphia, caring for business in Pennsylvania and the southern territory. R. H. Rehm will represent Nash, Isham & Co. in New England territory.

The Banner Iron Works, St. Louis, has increased its capital stock from $35,000 to $75,000.

INTERESTING TESTS

Will be Made for Benefit of Engineers' Society.

The regular monthly meeting of the Engineers' Society of Western Pennsylvania was held in the society rooms, Fulton building, Pittsburg, Feb. 15. Elmer K. Hiles was re-elected secretary for the ensuing year.

A paper on "The Government Testing Station in Pittsburg," was presented by J. C. Roberts, assistant chief engineer, Tech. branch, U. S. Geological Survey. Lantern slides were shown, illustrating apparatus in use at the station, and a very illuminating description of the work accomplished as well as that to be taken up in connection with the testing of structural materials, fuels and the causes and prevention of mine accidents, was given.

Up to the present time the work with structural materials has been confined to reinforced concrete and the constituent material of concrete and to the testing of various clay products in the clay products bureau.

During 1910 it is expected that a 10,000,000-pound testing machine will be installed, capable of testing 65 feet full size section columns, etc.

In the fuel investigations, most of the coals from the various districts have been tested under boilers and in gas producers, and various liquid fuels have been investigated. Much work has been done with briquetting coals. Investigations have been made along the line of the waste of coal, the conservative estimate being made that 200,000,000 tons of coal are wasted annually by being thrown on the culm banks, or left in the mine pillars and otherwise.

The gas producer investigations have demonstrated that highly efficient results can be obtained with the roof coal, bone coal, etc., that is usually wasted. When firing the producer with washer refuse, carrying 68 per cent ash, full load has been carried on the gas engine.

Much work has been accomplished in connection with the investigations of the causes and prevention of mine accidents. The loss of 3,000 to 4,000 lives yearly in the United States indicates the importance of this work.

Explosives are tested and the station has established a list of "permissible explosives" for use in coal mines.

Safety lamps are tested under every possible circumstance of use as well as the various types of rescue apparatus. In the rescue and training stations now in operation at Pittsburg; Urbana, Ill.; Knoxville, Tenn.; McAllister, Okla., and Seattle, Wash., training classes are established to educate the miners in the use of rescue apparatus and the operators are urged to send picked men to attend these classes and to establish local rescue stations in the vicinity of their mines.

An inspection trip has been arranged for Saturday, Feb. 26, when the members of the society will visit the testing station in Pittsburg.

Tests of explosives fired into 120 pounds of coal dust will be made in the gas and dust gallery, also disruptive tests will be made with the ballistic pendulum. Safety lamp tests and a practical demonstration of rescue work as carried out in mines will be made.

Tests of fire brick will be made under load conditions at temperatures of 2,400 degrees Fahr. The various clay testing machines will be in operation.

RECEIVERSHIP IS CONTINUED.

The reorganization of the J. B. & J. M. Cornell Co., New York fabricators, has not yet been completed and the receivers in bankruptcy have been given authority by the court to continue business for four months longer. The receivers in their statement declare they have on hand current assets consisting of raw material, accounts and work in progress to the amount of $180,000 over and above all liabilities. This amount does not include any prospective profits on contracts not yet completed. The most important work at present is on the New York state barge canal, which has been delayed by reason of the unfavorable weather conditions.

H. W. Andrews, of the firm of Andrews & George, representatives of American machine tool manufacturers of Yokohama, Japan, was in Cincinnati, Monday, in the interests of his people. He reports trade conditions during the past 18 months as very bad indeed, but notes considerable improvement during the past four months. Mr. Andrews says there is little difficulty in selling tools of American manufacture to any concern that wants high grade tools, and such concerns are always willing to pay the price, though higher, and secure American tools.

The Otis Elevator Co.'s directors have called a special stockholders' meeting March 21, to authorize an issue of $3,500,000 5 per cent convertible bonds, and to provide an increase of capital from $6,500,000 to $10,000,000 to care for the conversion of the new bonds.

REPORT SATISFACTORY

To Lackawanna Steel Interests Who Hold Subscription Rights.

Interests who are most familiar with the position of the Lackawanna Steel Co. are very well pleased with the report for the fiscal year ended Dec. 31 last, a synopsis of which was made public on Thursday, says the *Wall Street Summary*. In fact, those in control regarded the statement so favorably that they thought all the stockholders should have access to it in advance of the annual meeting, which will take place on March 9. The management maintained this opinion particularly because the stockholders have been given the right to subscribe to two new issues of bonds. In the opinion of the management the stockholders at large might wish to know the actual financial position of the company before deciding, whether they would exercise their privilege of subscription.

Apparently no one can justly find fault with the preliminary exhibit, inasmuch as it shows very large gains in practically every essential item. The expansion of $10,200,000 in the gross sales and earnings is particularly gratifying, in view of the fact that during a considerable part of 1909 the Lackawanna company, as well as all of the steel manufacturing companies, was obliged to sell its product at very substantial concessions from the prices that prevailed in 1908. Very satisfactory prices are now being obtained for all of the output of the company, and there is nothing to indicate any falling off during the first 6 months, if at all during the present year. The management of the Lackawanna company is confident of a large volume of business during the present year, and the improvements which have been made together with others which will be made, will make it possible to show even better net earnings than for 1909 which were well in proportion to the gross receipts.

The plant of the Forsythe Steel Tie Co., now located at Verona, Pa., will be removed to Youngstown, O., where a larger plant will be constructed.

Charles Outhwaite, receiver of the Capitol Lock-Nut & Washer Co., Columbus, O., has filed notice that the affairs of the company will be closed after March 15, and that final distribution will be made as soon after that date as possible.

INCREASED CAPACITY

Started by Southern Iron & Steel Co.—Annual Meeting Held.

The stockholders of the Southern Iron & Steel Co., at their first annual meeting, at Jersey City, Feb. 18, heard the report of President Hassinger to the effect that the company is now operating three blast furnaces and is making pig iron at the rate of approximately 20,000 tons monthly. It is also stated that by reason of the improvements and betterments that have been made to the plants, the company is now producing pig iron at a cost considerably below the previous estimates. The open-hearth furnaces have just been put in operation and it is expected that the new wire, rod, fence and nail mills will be running by April 1. This latter plant will have a daily capacity of 350 tons of finished and 150 tons of miscellaneous product. In conclusion, the president says: "Upon the completion and operation of the steel plant and rod and wire mills, the average net earnings of the company will be considerably in excess of the previous estimates of $1,200,000 annually." All the retiring officers and directors have been re-elected for the ensuing year.

TUNNEL CONTRACT AWARDED TO GEORGE W. JACKSON, INC., OF CHICAGO.

Contract No. 54 of the construction of the Yonkers pressure tunnel, connecting the Hill View reservoir for the Catskill aqueduct, has been awarded to George W. Jackson, Inc., of Chicago. The contract price is $1,479,425, and the time for completion is 40 months. This tunnel is being constructed for the board of water supply for the city of New York, and consists of about 12,300 feet of bore, 16 feet 7 inches inside diameter, through rock formation. This section of tunnel is located in the city of Yonkers, and is about a mile and a half from New York city limits. The structural steel and cast iron that will be required for the construction is about as follows: There will be about 350 tons of structural steel roof supports, about 225 tons of structural steel interlining for branch tunnels, and about 100 tons of cast iron pipe and special pipe castings.

The bridge and steel plant of George W. Jackson, Inc., is being enlarged by the addition of two buildings, 75 by 600 feet. These are to be equipped with crane runways. Two self-propelling dump scows, 35 by 150 feet, to be used in handling material in connection with the Jackson disposal station department, are being constructed. They will require about 400 tons of structural steel. Other contracts which this interest recently has secured or completed, include 750 tons of steel for the Comiskey ball park, in Chicago, 500 tons for the Rock Island railroad, and 2,500 tons for the Commonwealth Edison Co.'s addition to its Quarry street power plant. This latter contract was not awarded until Oct. 20, and all of the steel was received from the mill, fabricated and delivered before Feb. 1.

OFFERS TO MOVE MADE THE MT. VERNON BRIDGE CO.

The Mt. Vernon Bridge Co., Mt. Vernon, O., whose plant was destroyed by fire last week, has received offers from Dayton, Columbus and a number of other cities in Ohio and other states to move the plant, but it has not yet been decided what action will be taken. It is known, however, that the directors contemplate rebuilding on a considerably larger scale, regardless of where the plant may be located. With the exception of the office building and one or two other small buildings, the plant is a total loss. The insurance amounted to $80,000.

INTER-OCEAN STEEL PLANT NEAR COMPLETION.

The new plant of the Inter-Ocean Steel Co., at Chicago Heights, Ill., is almost completed, and the company expects to be making steel in a very few weeks. Three of the six open-hearth furnaces are completed, and the others nearly so. Locomotive tires and other steel rings will be among the products of the plant. Special machinery, designed by Julian Kennedy, of Pittsburg, the engineer for the company, has been installed, in which steel rings 4 feet in diameter can be rolled.

The Williamsport Gas Engine Works has reopened the plant of the Williamsport Gas Engine Co., Williamsport, Pa., which has been shut down during the past year, and will continue the entire line of gas and gasoline engines formerly manufactured by the old company. The new operators are looking for active agents in all sections of the country.

The Republic Iron & Steel Co. has declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable April 1.

COAL SHIPPERS

Will Likely Come Into the Market for Vessel Room This Week.

Capt. Alex. Cunning, of the Great Lakes Towing Co., has reached the steamer W. C. Richardson with the tugs Yale and Mason, and will resume the effort to raise her and get her into port. The bid of the Great Lakes Towing Co. for salving this steamer was only $7,500, being nearly $35,000 lower than the next lowest bid. Two attempts have already been made to raise this steamer and the towing company will doubtless lose heavily on the job. The underwriters have settled for the Richardson as a total loss, paying $200,000 on the hull and $375,000 on her cargo of flax, one of the heaviest losses in lake history.

It is expected that coal shippers will come into the market this week for tonnage. The rate to Lake Superior has been fixed at 30 cents and vessel owners have not yet abandoned their efforts to get 40 cents to Milwaukee, but the chances are against them. The lumber carriers have decided to ask for $2.50 for the head of the lakes.

Vessel owners who went south a month ago will return to town next week getting affairs into shape for the opening of navigation, which it is hoped will be early.

A PROSPEROUS SOUTHERN CITY.

"Remarkable Rome: Georgia's Hill City," is the title of a very handsomely printed and elaborately illustrated booklet issued by the Manufacturers' and Merchants' Association, of Rome, Ga., describing the many attractive features of that city, and showing how manufacturing and other industries are prospering. Iron ore is mined at 23 different places within 25 miles of Rome, much of this ore being used at the Silver Creek iron furnace. Limestone for fluxing and coke for smelting are found very near. The Southern Co-Operative Stove Foundry has rapidly increased its capacity, and with two other Rome stove foundries brings the annual production of over 60,000 stoves. This is one of the few successful co-operative institutions in the country.

The Oriskany Malleable Iron Co., Oriskany, N. Y., has voluntarily granted an increase of wages of from 10 to 15 per cent with the explanation that the advance is to meet the increased cost of living.

REPORT OF NEW YORK AIR BRAKE CO. FOR YEAR 1909.

The following statement of the income account of the New York Air Brake Co. for the year ending Dec. 31 last, has been made:

	1909.	Increase.
Sales and other income	$2,115,116	$513,510
Expenses	1,660,244	422,737
Balance	$ 454,872	$ 90,773
Interest on bonds	181,800	61,800
Surplus	$ 273,072	$ 28,973
Allow. for depre't'n, net	3,987	*59,946
Final surpluls	$ 269,085	$ 88,919

*Decrease.

The total allowance for depreciation in 1909 was $67,537, from which was deducted the reserve for depreciation amounting to $63,500, leaving the net $3,987.

The general balance sheet, as of Dec. 31, 1909, compares with that of Dec. 31, previous, as follows:

Assets:—		
Cash accounts rec. and merchandise	$ 1,806,576	$ 1,683,549
Factories, patents, and water power	10,930,841	10,637,203
Stock investment and real estate	541,328	552,914
Profit and loss (deficit)		261,465
Total	$13,278,746	$13,135,133
Liabilities:—		
Accounts payable	$ 221,128	$ 21,201
Accrued int. on bonds.	30,000	30,000
Mortgage on real estate	20,000	20,000
First mortgage 6 per cent gold bonds	3,000,000	3,000,000
Capital stock	10,000,000	10,000,000
Reserve for depr'n		63,932
Profit and loss surplus.	7,618	
Total	$13,278,746	$13,135,133

President C. A. Starbuck in submitting the statement, made the following remarks on the year's operations:

In presenting to you the company's report of the operations of the past year we desire to call your attention to the fact that practically all of the profits have been made in the past four months, as during the first eight months of the year the business was very light, owing to the fact that railroads were unable to finance their requirements, and hence had no recourse but to suspend their orders for equipment.

The change in conditions came about late in the summer, and since then our business has steadily grown, and we now have unfilled orders aggregating over $1,250,000, so that we have reason to believe that the year 1910 will be a very prosperous one for the company.

The company has expended a large amount of money in putting its machinery in good repair, all of which has been charged off.

During the past year the company has made many improvements in its brake apparatus, necessitated by the increased trainload and larger motive power to operate same, on which it has taken important and valuable patents, both in this country and in Europe.

No action was taken at this meeting of the directors as to resumption of dividends, although the intimation was given that at the March meeting a declaration may be made.

NEWS OF THE GREAT LAKES.

Lake ship builders are working vigorously to keep up with their construction program, but are laboring against heavy odds. Aside from a considerable new program, repair work is unusually heavy, much of it being of an extensive character, including the modernizing of eight vessels of the old style of construction. M. A. Hanna & Co. will operate the two 10,000-ton steamers building at the Lorain yard of the American Ship Building Co. and reported some time ago as being built for southern furnace interests. One of these steamers will be named in honor of Charles S. Price, president of the Cambria Steel Co., and the other in honor of Joseph Wood of Pittsburg, first vice-president of the Pennsylvania Railway Co.

No change is noted in the freight market, though coal charters may be closed before the end of the week.

NOVA SCOTIA STEEL & COAL CO. MAKES REPORT.

The Nova Scotia Steel & Coal Co. has issued its full pamphlet report for the year ending Dec. 31, 1909, which shows the following:

	1909.	Increase.
Gross profit	$ 907,949	$ 173,248
Bond and other interest.	277,837	*3,813
Balance	$ 630,112	$ 177,061
Deprec., sinking fund, improv., insur., etc.	370,127	90,908
Balance	$ 259 985	$ 86,153
Surplus after divs.	117,585	100 967
Previous surplus	1,219,222	16,618
Total surplus	$1,336 807	$ 117,585
Bonus stock dividend	1,000,000	1,000,000
Profit and loss surp.	$ 336,807	*$ 882,415

*Decrease.

COMPLETING NEW STACKS.

Construction work on the new blast furnaces of the Reading Iron Co., at Emaus, Pa., and of the E. & G. Brooke Iron Co., at Birdsboro, Pa., are rapidly nearing completion. They are expected to be turned over to the owners within a month's time. Both are modern blast furnace plants. The new Brooke plant includes an arrangement of reinforced concrete bins. Frank C. Roberts & Co., Philadelphia, are the engineers designing and superintending the construction.

Both the common and preferred shares of Republic Iron & Steel Co. will be dealt in on the Amsterdam bourse, the Dutch having been extensive investors in that company's securities since the panic of 1907.

METAL BRIDGE BIDS

Asked on Construction to Unite Two Large Plants.

Bids have been asked for by Frank C. Roberts & Co., Philadelphia, engineers in charge, on the sub-structure for the hot metal bridge that will be built across the Schuylkill river connecting the steel works of the Alan Wood, Iron & Steel Co., at Ivy Rock, Pa., with the blast furnace plant of the Richard Heckscher & Sons Co., at Swedeland, Pa. The bridge will be of heavy steel construction, 882 feet in length and will carry a standard gage track to accomodate 40 ton ladle cars. The bids for the steel work required will be invited within a week, the construction of the hot metal bridge virtually means the operating consolidation at least of these two large interests which have been among the most inportant in the respective activities in the east.

LEBANON VALLEY MERGER MEANS CONSIDERABLE NEW BUILDING.

The Lebanon Valley Iron & Steel Co., Lebanon, Pa., advises respecting the increase of its capital from $5,000 to $700,000, that it has merged with the Lebanon Valley Iron Co., with a capital stock of $300,000, making the total capitalization $1,000,000. This increased capacity will be employed in the manufacture of bolts, nuts, rivets, railroad spikes, washers, etc. It expects shortly to start the erection of a building 70 x 200 feet, of steel, and later erect another building of the same size. In addition, it plans to build another rolling mill, with a capacity of about 175 tons daily, to supply stock to its factory. The officers of the company are: President, H. H. Light; treasurer, S. P. Light; secretary, William S. Davis.

In line with its plant extensions, the company is broadening its selling activities and has opened a New York office at 90 West street, with W. E. Buckingham, formerly connected with the Lackawanna Steel Co., as district sales agent. This office will also handle the New England trade.

Copper exports for the week ending Feb. 17, were 4,516 tons, an increase of 2,526 tons; for the month to date, 19,259 tons, an increase of 11,840 tons; from Jan. 1, 45,857 tons, an increase of 19,248 tons.

The annual meeting of the Lackawanna Steel Co. will be held March 9.

MORE CHEERFUL

Is Tone of Finished Material Market in the East.

New York, Feb. 23. (By wire.)

A more cheerful tone generally is noted in the finished material market and car buying and other plans held up are beginning to show more signs of life. New business, as yet, is appearing only moderately, but better sentiment is expected to bring out more tonnage soon. Wire business is exceptionally good and specifications entered by the leading interests in February have averaged between 5,400 and 5,500 tons daily, which is considerably in excess of 1908 and 1907, and on about the same terms as in 1906, a full year. The Merchants Despatch Transportation Co. is building 2,000 steel underframe freight cars and is in the market for 5,500 tons of material. The Lehigh Valley is to build 1,000 steel hoppers in its own shops and is inquiring for 9,800 tons of steel. Structural lettings are not heavy.

Worcester, Mass., viaduct on the New Haven road, about 3,500 tons, was divided between the Phoenix Bridge Co. and Boston Bridge Co. The Ward Corby bakeries, Brooklyn and the Bronx, 2,500 tons, will, it is understood, be fabricated by Post & McCord. We quote iron bars 1.60c to 1.65c. Other products unchanged.

GENERAL ELECTRIC RENEWS PIG IRON INQUIRY.

New York, Feb. 23. (By wire.)

The General Electric Co. is renewing its inquiry for pig iron for Lynn and part of its Pittsfield requirements.

The Metropolitan Street Railway Co. has divided 4,200 tons of girder and conductor rails between the Pennsylvania Steel Co. and the Lorain Steel Co.

PERSONAL.

W. A. Rogers, of Rogers, Brown & Co., sailed from New York, Feb. 19, on board the Caronia, bound for Naples.

George M. Gillette, president of the Minneapolis Steel & Machinery Co., has been elected president of the Minneapolis Traffic Association.

D. P. Davies has severed his connection with the Allis-Chalmers Co. at its West Allis plant and has accepted the position of directing engineer of the J. I. Case Threshing Machine Co., at Racine, Wis.

W. P. Snyder, of W. P. Snyder & Co., Pittsburg, accompanied by his daughter, Miss Mary Snyder, left this week for a month's vacation, which will include a trip to the West Indies and South America.

W. H. Sutliff, who has been the representative in Cleveland for several years for the Trussed Concrete Co., has resigned and is now associated with the Bolton & Pratt Co. as an engineer in charge of estimates.

Clement K. Quinn, formerly mining engineer for the Inter-State Iron Co., has been appointed chief engineer of the mines of the Jones & Laughlin Steel Co., in Minnesota, comprising 11 operations on the Mesabi range.

Frank S. Komp, who has been connected with the Modern Steel Structural Co., Waukesha, Wis., for several years, has resigned to become associated with the Lehigh Valley Steel Structural Co., at Allentown, Pa.

E. G. Mather, formerly connected with the western office of the National Acme Mfg. Co., Cleveland, and the Indiana territory for several years, has been transferred to Detroit and eastern Michigan territory, formerly covered by W. C. Lang.

A. C. Green, formerly with the Allis-Chalmers Co. and the Colorado Iron Works Co., and later with the American Smelting & Refining Co., has been appointed manager of the Great Falls Iron Works, Great Falls, Mont. F. V. Johnson has taken a position as engineer with the same company.

W. P. Schuck, a chemical engineer and graduate of Washington University, St. Louis, has associated himself with J. H. Linton in the Pacific Coast Testing Laboratory, Seattle. Mr. Schuck was formerly with the Silica Brick & Lime Co., Victoria, B. C. The Pacific Coast Testing Laboratory makes a specialty of applied foundry chemistry.

OBITUARY.

Col. Samuel K. Herr, of Westminster, Md., died at his home in Westminster, on Monday night, Feb. 14, of acute indigestion. Col. Herr was for many years interested in the Savage Mountain Fire Brick Co., of Frostburg, Md.

Hugh B. Davison, superintendent of the foundry of the Lorain Casting Co., Lorain, O., died in that city Feb. 21, of pneumonia, aged 67. He removed to Lorain from Troy, N. Y., 15 years ago, as superintendent of the Lorain Foundry Co., when it was first established.

Julian J. Alexander, for 24 years president of the Georges Creek Coal & Iron Co., died unexpectedly Feb. 20, at his home at Baltimore, aged 72. He was born in Baltimore in 1837, became a director in the Georges Creek Coal & Iron Co. in 1867, and in 1886 was chosen its president.

W. H. Bailey, for five years manager of the Whitaker - Glessner mills in Wheeling and Martins Ferry, died unexpectedly at his home in Wheeling, aged 66. Prior to going to Wheeling, Mr. Bailey had been employed in the mills of the American Sheet & Tin Plate Co., at Piqua, O., and Muncie, Ind.

John Means, member of a family of pioneers in the iron industry of the Hanging Rock region, and an associate of the late David Sinton, died last week at his home in Ashland, Ky. Mr. Means was originally associated with the company operating the Ohio furnace in the days of charcoal iron production.

Henry James Racey, vice president and general manager of the hardware firm of Orr & Lockett, Chicago, died at his residence in that city, Feb. 17. He went to Chicago in 1882, and entered the employ of the above firm as a clerk; he was advanced rapidly and, on the death of Mr. Orr, three years ago, was made vice president.

James O'Donnell died at his residence in Chicago, Feb. 15. He had been engaged in the iron and steel business in that city for over 30 years, latterly representing the Pittsburg Steel Co. until his retirement from active business, a few months ago. Mr. O'Donnell was a civil war veteran, having lost the sight of his right eye at the battle of Altoona Pass.

John Crawford Porter, aged 79, well known in iron and steel circles in the Pittsburg district, died at the home of his son-in-law, Dr. Rowland T. White, on Feb. 17. In 1862, Mr. Porter engaged in the iron and steel business, first as a member of the firms of McKnight, Duncan & Co. and McKnight, Porter & Co. In 1880, he became a partner in the Spang Steel & Iron Co., of which he was secretary and treasurer until ten years ago, when he retired from active business life.

Paul A. Fusz, president of the Bi-Metallic Mining Co., died while visiting the home of his boyhood friend, George Miltenberger, 3758 West Pine boulevard, St. Louis, Feb. 16. Mr. Fusz was 63 years old. He began business with the foundry firm of Chouteau, Harrison & Valle, as an errand boy, and rose to be general manager of the company in 1873. He became associated with the Laclede Roller Mills in 1885, which sold out to the Granite Mountain Mining Co., of which he was a director and treasurer. When that concern was consolidated with the Bi-Metallic Mining Co., in 1898, he remained as president of the joint corporation.

Substantial Gain Made in Prices

The reaction from extreme low prices which began last week, resulted in gains from the lowest point, running from 1-3 to ½ of the whole loss, and in the case of Reading, the gain carried the stock to a new high record.

Monday, traders attempted further bear operations, but failed to bring out any important selling, and after a brief interval stocks began to rise. The change in feeling was attributed largely to the effect of President Taft's speech of the week before. The market closed with higher average of prices, and money was easy. Tuesday, trading was dull, the bulk of the business being done in Reading and United States Steel common. Private rates of exchange in Berlin were higher, and the foreign market was also dull. Wednesday, Reading and Steel common continued to be the important shares traded in. The market was firm and closed higher. Quincy Copper Mining Co. declared a dividend of $1.50 a share, which was an increase of 50 cents. The semi-annual dividend of the Soo Line was increased to 3½ per cent. Money was easy and sterling exchange higher. Thursday, the wheat market spurted to the highest point of the year, but fell back again. Cotton was lower. Gold to the amount of $1,250,000 was engaged for export to South America, and the market was active and broader with prices higher. Friday, about one-fourth of the trading was in Reading, and that stock advanced to the highest point of the year. The market was again high, particularly in railroad shares. Money continued easy. Saturday, there was a slight reaction and the market closed lower.

Money on call throughout the week was easy, with rates ranging from 2¼ to 3 per cent. The ease in call money made the market for time money somewhat dull.

Clearings for the United States were estimated at $3,515,487,478, an increase of 18 per cent over the week before. The corresponding week the year before the clearings were $2,895,321,416. The actual report of clearing house banks showed loans increased $18,448,000; deposits increased $17,159,900; surplus decreased $5,039,575; the ratio of reserve was 26.8, against 27.4 the week before. Trust companies and non-member banks showed loans and investments increased $495,600; deposits decreased $4,145,400; the percentage of reserve 17.4, against 17.7 the week before. Gold shipments reported at the custom house were $525,200, of which $500,000 went to Argentina. Failures for the week numbered 267, against 289 the week before and 278 the corresponding week last year. Liabilities in February, up to the 19th, amounted to $15,422,341, against $9,819,545 the corresponding period of 1909.

Gross earnings for the railroads during January showed an increase of $7,356,000, as compared with the corresponding period of last year. The number of shares dealt in on the New York exchange amounted to 4,181,400, against 4,788,600 the week before, and 3,449,860 the corresponding week of the year before. Bonds, other than government bonds were dealt in to the value of $16,417,000, against $16,975,000 the week before, and $29,899,000 the corresponding week of the year before.

Copper Stocks.

New York.—Amalgamated Copper closed at 76¾, unchanged.

Boston.—Butte Coalition closed at 24½, an advance of ⅜; Calumet & Arizona closed 73, an advance of 1½; Calumet & Hecla closed 640, an advance of 10; North Butte Mining closed at 34, a decrease of 1¼; Quincy Mining closed 89, an advance of 7.

Financial Notes.

The Hamilton Steel Co., Montreal, Canada, has increased its dividend from 6 to 8 per cent per annum.

The American Radiator Co. has declared an extra dividend of 2 per cent on common stock in addition to the regular 2 per cent payable March 31, making 10 per cent for the year. The company has decided to cancel $2,000,000 unissued preferred stock, and issue a like amount of new common stock, making the capital $3,000,000 preferred and $7,000,000 common stock.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Feb. 19	Changes in week	Date 1910 Ann.M't'g.	Stock Outstanding	Basis	Dividend Last Dividend	Dividend Date Last Div. Pay.
Allis-Chalmers	12½	+ ½		$19,820,000			
Allis-Chalmers, pr	42½	+1½		16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	11½	+ ⅛	Feb. 2	41,233,300			
American Can, pr	76¾	+ ½		41 233,300	7 cum.	1¼ Q.	Jan., 1910
Am. Car & Fdy	62¼	+2¼	June 24	30,000,000		½ Q.	Jan., 1910
Am. Car & Fdy., pr	118¾	+ ⅝		30,000,000	7 n. c.	1¾ Q.	Jan., 1910
American Loc	51	+1½	Oct. 18	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr	113	+1		25,000,000	7 cum.	1¾ Q.	Jan., 1910
Am. Ship	74	.....	Oct. 12	7,600,000	4	1 Q.	Mar., 1910
American Ship, pr	111	.....		7,900,000	7 cum.	1¾ Q.	Jan., 1910
Am. Steel Foundries(new)	60½	+4	Dec. 1	17,184,000		1¾ Q.	
Barney & Smith	40	.....	June 7	2,000,000	4	.....	Sept., 1907
Barney & Smith, pr	100	.....		2 500,000	8 cum.	1 Q.	June, 1908
Bethlehem Steel	28½	+ ½	April 5	14,862,000		.....	.....
Bethlehem Steel, pr	56¾	—1¼		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	48¾	+ ¼	Mar. 15	45,000,000	5	2½ S. A.	Feb., 1910
Cambria Iron	47	.....		8,468,000*	4	2 S. A.	Sept., 1909
Chicago Pneumatic Tool	44	—1½	Feb. 21	6,145,000	4	2 S. A.	Oct., 1907
Colorado Fuel	40¼	+3⅝	Oct. 17	34,235,500		1¾ Q.	April, 1902
Crucible Steel	15⅛	+ ¾	Oct. 19	24.578,400		3½	
Crucible Steel, pr	87⅜	+2⅜		24,436,000	7 cum.	1¾ Q.	Dec., 1909
Empire Steel	13	.....	Feb. 23	1 254,770		.....	.....
Empire Steel, pr	83	—1		2,500.000	6 cum.	3 S. A.	July, 1909
Fay & Egan	90	.....	Feb. 15	1,000,000	7	3 S. A.	Feb., 1910
Fay & Egan, pr	120	.....		1,000,000	7 cum.	1¾ Q.	Nov., 1909
General Electric	156½	+4¾	May 10	65,179,600	8	2 Q.	Apr., 1910
Harbison-Walker	35½	+ ½	Jan. 17	18,000,000		2 Q.	Oct., 1907
Harbison-Walker, pr	94	.....		9,600,000	6 cum.	1½	Oct., 1909
International Pump	48¼	+2¼	May 10	17,762,500		1 Q.	April, 1905
International Pump, pr	88	+2½		11,350,000	6 cum.	1½ Q.	Feb., 1910
Lackawanna Steel	50	+2¼	Mar. 9	34 978,000		.....	.....
Lake Sup. Corp.	24¾	+ ¾	Oct. 5	40,000,000		.....	.....
New York Air Brake	75¼	—1¾	June 16	10,000,000	8	2 Q.	Oct., 1907
Niles-Bement-Pond	10[illegible]	.....	Feb. 2	8,500,000	6	1½ Q.	Mar., 1910
Niles-Bement-Pond, pr	104	.....		2,000,000	6 cum.	1½ Q.	Feb., 1910
Otis Elevator Co	53	+1	Mar. 21	6,375,300	3	1½ S. A.	Oct., 1909
Otis Elevator Co., pr	98	+1		6,295,000	6 n. c.	1½ Q.	Jan., 1910
Pa. Steel	65	—1	May 9	10,750,000		.....	.....
Pa. Steel, pr	113½	.....		16,500,000	7 n. c.	3½ S. A.	Nov., 1909
Pittsburg Coal Co	21	+ ½	Mar. 8	28 104,600		.....	.....
Pittsburg Coal Co., pr	71½	+ ½		27,071,800	7 cum.	1¾ Q.	Jan., 1910
Pressel Steel Car	43	+2½	Feb. 16	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	102	—1		12,500,000	7 n. c.	1¾ Q.	Feb., 1910
Pullman	197½	—1¾	Nov. 9	100,000,000	8	2 Q.	Feb., 1910
Railway Stl. Spring	43	+2	Mar. 3	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	.....	.....		13,500,000	7 cum.	1¾ Q.	Dec., 1909
Rep. Iron & Steel	40	+2⅜	Oct. 19	27,191,000		.....	.....
Rep. Iron & Steel, pr	102½	+2⅝		20,416,900	7 cum.	1¾ Q.	Apr., 1910
Sloss Sheffield	77	.....	Mar. 9	10 000,000	5	2 Q. †	Feb., 1910
Sloss-Sheffield, pr	116⅛	.....		6,700,000	7 n. c.	1¾ Q.	Jan., 1910
U. S. Pipe & Fdy. Co	25¾	+ ¼	June 22	12,106,300	2	1 Q.	Dec., 1907
U. S. Pipe & Fdy. Co., pr	79½	+ ½		12,106,300	7 n. c.	1¾ Q.	Mar., 1910
U. S. Steel	80⅝	+1⅞	April 18	508,302,500	4 n. c.	1¾‡ Q.	Mar., 1910
U. S. Steel, pr	120¼	+ ⅜		360,281,100	7 cum.	1¾ Q.	Feb., 1910
U. S. Steel, 5s	105¼	+ ⅜		463,798,000	5	.....	.....
Va. Iron, Coal & Coke	62	—1	Sept. 20	9,073,680		.....	.....
Westinghouse Elec	70¾	+2¼	July 27	27,173,200*		1¾ Q.	Oct., 1909
Westinghouse Air Brake	144	—2½	Oct. 4	14,000,000*		4 Q.	Oct., 1909

†Includes deferred dividend of ¾ of 1 per cent.
Par value of shares, $100, except those starred (*), $50.
‡Includes ¾ per cent extra.

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January, 1909	5,506
February	5,346
March	5,396
April	5,508
May	5,533
June	5,551
July	5,572
August	5,597
September	5,609
October	5,628
November	5,634
December	5,662
January, 1910	5,681
February	5,703

February 24, 1910

A NEW IDEA IN COST SYSTEMS.

The manufacturers and employers of labor on the Pacific coast have struggled for years under handicaps that would have overwhelmed men gifted with less determination and resourcefulness.

Added to disadvantage in location with respect to supplies and material and a relatively narrow market, which made manufacturing methods commercially impossible and forced each engineering concern to cover practically the entire field of mechanical engineering activities, they have been the victims of relentless and insatiable labor demands which have, as was anticipated long since, practically destroyed business. The paper on another page is worthy of attention as a concise statement of facts by a gentleman who knows his subject.

A few years since, there were no works in the United States more widely known than the Union Iron Works, of San Francisco, and few names more familiar than that of George W. Dickie, for many years, in fact up to the time of their absorption by the now defunct United States Ship Building Co., their active manager, and the author of the paper referred to. It is besides interesting for its presentation of a suggestion which is certainly striking, and merits, and will doubtless receive, careful consideration and provoke much discussion.

Mr. Dickie, after drawing attention to a fact well known to manufacturers, that premium, or bonus, systems are inapplicable where work is seldom duplicated and where selling prices are therefore to be determined for almost every sale from estimates based on the conditions existing at the time, and even labor records may be unreliable because of changes in the force, the labor market, changes in equipment, differing conditions as to amount of work on hand, etc., proposes that in making up this estimate the largest and most uncertain factor, labor, should virtually be incorporated at its own valuation, and this valuation is to be the basis of settlement. If the estimate is high, so much the better for the men; if it is low, they lose the difference. The employer gains or loses also in the same way because the labor estimate is the largest factor in his profit. It is too much to expect that the Pacific coast will be the scene of the first trial of this plan; the well-known hostility of all labor organizations to any plan in which they share anything but profits and spoils and their present domination of coast business activities make that much practically certain. But if there be, as we believe, merit in Mr. Dickie's thought, it will be worked out sooner or later, regardless of the attitude of any organization of either employers or employes, and if properly taken advantage of and heartily supported, it ought to be of tremendous advantage to both.

Another interesting discussion of labor conditions on the Pacific coast is the paper, published in this issue, by Joseph J. Tynan, general manager of the Union Iron Works Co., who recently addressed the Commonwealth Club, of San Francisco.

SHIFTING PIG IRON CENTERS.

The general impression last fall was that the steel industry was recuperating from the depression much more rapidly than the iron foundry industry, so that production of steel making iron gained more over previous records than did production of foundry iron. This view was not borne out by the official statistics, since the analysis in these columns a fortnight ago showed that, in round figures, steel making pig iron in 1909, as compared with 1907, gained only 200,000 tons, while spiegeleisen and ferromanganese lost 115,000 tons, and all other grades lost only 72,000 tons. The two years can be compared very conveniently, since the total in 1909 exceeded that in 1907 by only 14,110 tons. A variation of a couple hundred thousand tons either way is not significant, yet grouping basic and Bessemer pig iron and ferromanganese and spiegeleisen together, the gain in these grades from 1907 to 1909 was only 86,000 tons, while all other grades lost 72,000 tons. This is not as would have been supposed; when demand suddenly slumped in the two closing months of 1907, it is easily recalled that the steel works furnaces promptly curtailed production, while the merchant furnaces were slower in doing so, and accumulated some stocks, so that unless demand for foundry grades of iron was really greater in 1909 than in 1907, there is room for the inference that there was a greater accumulation of stocks in 1909 than in 1907.

While there was a surprisingly small variation in the distribution of pig iron production, as to grades, from 1907 to 1909, there were some very great changes in the geographical distribution. As a general rule, there was an increase in the production by Alabama and by the district tributary to Lake Superior ores, while there were decreases in almost all other districts.

Alabama showed an increase of 77,000 tons, and, noting that its sister state Tennessee showed a decrease of 60,000 tons, one might infer that the distinction was that Alabama produces both foundry and steel making iron, while Tennessee has no steel industry, but the inference is not supported by the general trend in the country, which showed so slight a gain in steel making iron.

In the region tributary to the Lake Superior region, there were very large gains. Ohio gained 300,000 tons, or more than 5 per cent, while Indiana and Michigan gained 525,000 tons, more than doubling. This was due, of course, to the Gary furnaces. Having regard to the dates when the various Gary furnaces were blown in, there was an average of three and two-thirds furnaces in blast at Gary in 1909, with scarcely any production in 1908, and as the Gary furnaces are rated at 150,000 tons each, this would almost exactly account for the increase, which was, for Indiana and Michigan, from 436,507 tons to 964,289 tons.

New York state showed an increase of 74,000 tons, presumably due chiefly to greater activity on the part of furnaces in the western part of the state.

Pennsylvania stood by itself, since while the lake ore states just mentioned showed large gains, Allegheny county and the Shenango valley lost 262,000 tons. The "miscellaneous bituminous" of Pennsylvania gained 90,000 tons, but it would not be entirely fair to count them.

Coming now to the detached districts, losses are shown at nearly all points. The four valleys of eastern Pennsylvania, Lehigh, Schuylkill, Susquehanna and Juniata, lost 238,000 tons, while New Jersey lost 79,000 tons. Maryland, chiefly a Bessemer steel rail state, lost 125,000 tons, dropping from 412,000 to 287,000 tons. The western states, Colorado, Oregon, Washington and California, lost 86,000 tons, or nearly 20 per cent.

Thus the only gains made in 1909 over 1907 were in Alabama and the central west, using Lake Superior ores, while the only district tributary to lake ores which did not gain was western Pennsylvania.

As the detached districts which lost ground are chiefly foundry iron producing districts, and as foundry iron on the whole lost little ground, it would seem that more foundry iron was made from Lake Superior ores in 1909 than in 1907, rather a significant fact, considering that lake ores were only 50 cents lower for 1909 than for 1907, whereas pig iron was very much lower. Thus the average quoted price of No. 2 foundry iron at valley furnaces in 1909 was about $15.50, the average in 1907 was fully $22, and while furnaces did not realize that average price on their output they should have averaged better than $20, for the market crossed $18 the previous August, and $20 in October. It is fair to conclude that merchant pig iron in the central west brought at least $5 a ton less in 1909 than in 1907, with ore only 50 cents cheaper, and yet the production increased, when the production of districts using local ores as a rule showed important decreases.

THREATENED CANCELLATIONS DISTURB SCOTTISH MARKET.

A controversy over the threatened cancellation by makers of unspecified tonnage under contract, which is stated to have taken on a serious aspect, is now concerning the Scottish iron and steel trade. Relative to this development of the market, the *Ironmonger* says:

"At the close of February all steel contracts booked between August and November last, which have a three months' currency, will cease to have effect, any balance of material which has not been taken up being wiped out. The replacement of these cancelled quantities will involve buyers and consumers in an increased charge of 10s a ton, and the prospect is not pleasant for many firms, particularly merchants who in placing contracts merely covered engagements made with them, yet against which from a variety of causes it has not been convenient or possible for their customers to specify. In this latter connection strong representations for further moderate consideration have been advanced, but so far without result; and the prospect is that cancellation will be strictly enforced in the course of the next few weeks. This uncompromising attitude on the part of the steelmakers—in defense of which, however, some sound arguments could be advanced—has brought about an unexpected result. Realizing that there was nothing to be gained on their part by acquiescence, many merchants with good outstanding balances have, it is reliably stated, approached shipbuilders and named such terms that the latter have arranged at once to furnish specifications for material that will not actually be required for months, but of which the shipbuilders will now take delivery, stocking it in their respective yards. As a consequence, it looks as if the producers will be kept busy rolling steel for the remainder of the month, although afterwards there may be a serious pause. Other merchants have determined to let their contracts lapse, and not to enter into reengagements, risking their chance subsequent to February on the developments of the position. How affairs will work out it is impossible to say; but at the moment the relations between producers and consumers are more strained than they have ever been before, and that fact does not make for the general advantage of trade.

"It also appears that certain pig iron makers are pressing buyers to show more energy in the acceptance of deliveries; and although in this case cancellation of balances is not threatened, it has been intimated that for all balances not accepted at the close of the contract periods payment must be made, the iron remaining (of course, at the option of the buyers) in the makers' yards."

STEEL PACKET BOAT OF NOVEL DESIGN.

E. E. Green, contracting engineer for the American Bridge Co., at St. Louis, has designed a new style river freight and packet boat, which the Mississippi Valley Transportation Co. has decided to adopt. The company will build two boats and expects to have them in commission the coming summer. The new boat is 550 feet long, 60 feet wide, with low fast side wheel compound engines. The hull will be divided into a number of compartments so that, even if several are punctured, the vessel will not sink. The only superstructure carried upon decks will be a small building amidships to cover the boiler and house the crew. The vessel will draw 12 inches of water, and will carry 1,000 tons of freight for every additional 12 inches of draft, thus carrying 5,000 tons of freight with six feet draft. It is designed to run between St. Louis and New Orleans, stopping at principal ports where high-speed unloading facilities will be installed. Loaded to full capacity, the boat is expected to run 14 miles an hour up stream and from 17 to 18 miles an hour down stream.

AMONG MACHINERY MAKERS.

PITTSBURG.

Business as Good as Any Time in Last Six Months—Inquiries Numerous.

Office of THE IRON TRADE REVIEW, 510 Park Building, Feb. 21.

Pittsburg machinery manufacturers report that new business booked so far this month is as heavy, if not heavier, than for the corresponding period in January. In addition to the orders actually placed numerous inquiries involving large tonnage are coming in, and some of these contracts likely will be awarded before March 1. It has been reported in some quarters that some of the contracts for machinery placed during the closing months of 1909 have been cancelled, but investigation shows that there is positively no truth in the report. Makers say that business in this particular line at the present time is as heavy as at any time within the last six months, and that with the orders now on the books and the new business in sight, steady operation of their plants for some time is assured.

Notwithstanding that some makers, owing to the sold-up condition of their plants, are not in a position to accept much new tonnage for immediate shipment, new inquiries are coming out almost daily. With the opening of spring it is expected that local manufacturing concerns, traction companies and steam railroads will take up the usual spring work of making renewals and extensions at their plants. In this connection, it it unofficially stated that the Pittsburg Railways Co., in addition to building new car barns on the Oakland site purchased recently, will erect a branch power station on the site. The company is also making some extensions and renewals at its Brunots Island plant. Several of the railroads will be obliged to install heavier machinery at their various car repair plants. It is expected that this work will be started early in the summer, when car and locomotive repair work is light.

The National Roll & Foundry Co., some time within the next two or three months, will install an open-hearth furnace in addition to its present running capacity of two cupolas. The castings for the American Rolling Mill Co.'s new sheet mill job, secured by this company, were sublet, this company not being in a position to make steel castings.

The Velte Foundry & Machine Co. has started work on the foundation for its new plant to be built at Mars, Pa. The company recently sold its Lawrenceville (Pittsburg) plant to the Heppenstall Forge & Knife Co., Pittsburg, and the capacity of the new plant at Mars will be about double that of the Lawrenceville works. The company makes a specialty of Seiman gas valves, furnace castings, gas engine castings, sewer drop castings, sand dryers and brake shoes for street railways. Contracts have been awarded for the following buildings to be erected at Mars: Gray iron foundry, 60 x 200 feet; machine shop, 50 x 100 feet; pattern shop, 50 x 100 feet; power house, 50 x 75 feet; office buildings. The new plant will have a capacity of 25 tons of castings per day, and will be ready for operation by May 1 of this year.

C. H. Weisser, of McKeesport, vice president and general manager of the Haywood Coal & Mining Co., announces that the company will develop a 400-acre coal tract in Harrison county, W. Va., recently acquired by the company. Contracts for the necessary equipment will be awarded shortly.

The New York & Cleveland Gas Coal Co., Pittsburg, is making arrangements to develop a tract of 2,000 acres of coal at Delmont, Westmoreland county, Pa. The mine is to be modernly equipped and will have a capacity of 4,000 tons per day. The Hicks Coal Co., Leechburg, Pa., will install 15 new coal cutting machines with necessary equipment. The Independence & Avella Coal Co. will develop 1,200 acres of coal near Independence, Pa., and it is expected that the necessary equipment will be ordered within a month. Several other coal companies are making arrangements for installation of new machinery, with a view of increasing the production of their plants. It is expected that this work will be taken up as soon as the winter rush ends.

NEW YORK.

Broadening of Machine Tool Market Noted—Railroad Lists Pending.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., Feb. 21.

Favorable reports of a continued demand for machine tools are made by builders and sellers and while there is still deliberation upon the part of the railroads in closing for their pending lists, other lines of industrial patronage are very satisfactory. Some large houses report that the run of business this month is exceeding that of January and there is to be noted a more marked revival of interest in those classes of machines which have been lagging somewhat behind the demand for certain other types. The encouraging tendency of the market is toward a broader selling situation, in that current inquiry is embracing a larger assortment of types which is a more favorable condition for shop operations, and in the larger number of moderate-sized lists that are coming out. While some days record a falling off in prospective business, the weekly aggregates are showing up very well in comparison.

The buying of the automobile manufacturers for their requirements, principally in the precision designs of machines, is nearing the close of the season, but their purchases this year will aggregate an enormous expenditure. This is well illustrated in the delivery situation upon milling machines, which finds some makers filled up almost to the end of the present year. There is a better call for planers and radial drills.

The Baltimore & Ohio railroad having closed upon its large list principally for its Mount Clair shops, is still making purchases of a miscellaneous character for its various requirements. The large Chicago, Burlington & Quincy list is still pending, as are several other important assortments largely from western roads. The New York Central lines are sounding the market, investigating prices and designs and will likely be a buyer soon.

The seasonable lull is upon the market for hoisting equipment largely because of the unfavorable season at hand for contracting work. There is, however, some buying in progress from operations which are well under way, notably the New York aqueduct work and the construction of the new state barge canal.

Car buying of the week has been light and the railroads are still hesitating as to placing prospective expenditures under contract. The Western Maryland and Rock Island have brought out new actual inquiries and will likely close up a part of them at least during the week. The industrial car situation shows no change of interest and the demand is only fair owing to the unfavorable time for

buying by contracting interests. Prospects, however, are good.

Excellent prospects for business in electric motors, generators and transformers during 1910 were reported by district and branch office managers of the Crocker-Wheeler Co., who met in convention during the past week at the main office and works of the company at Ampere, N. J., and in New York. The officers represented at the meeting and the managers were as follows: Boston, R. N. C. Barnes; New Haven, Conn., W. F. Hurlburt; New York, W. F. DeGress; Syracuse, H. B. Hussey; Newark, N. J., H. L. Patteson; Philadelphia, S. Russell Jr.; Baltimore, Harold Lomas; Charlotte, N. C., O. A. Robbins; Birmingham, Ala., B. A. Schroeder; Pittsburg, H. J. Sage; Cleveland, Howard Dingle; Chicago, Julian Roe; Denver, D. Vance Sickman; Detroit, Chas. W. Cross.

Sealed proposals were received Feb. 23 at the office of the commissioner of the District of Columbia for one 12 x 12-inch triplex single-acting plunger pump, and one 20-horsepower Springfield gas engine.

The Hendee Mfg. Co., Springfield, Mass., manufacturer of motor cycles, has been reorganized with a capital stock of $2,600,000. A new and enlarged factory will be begun about March 1 and completed before summer. It will be about 40 by 250 feet, five stories and basement and will be connected with the present building.

A number of extensive improvements, including a large new power station, are proposed for the plant of the Massachusetts Cotton Mills, Lowell, Mass. The board of directors of the corporation has recommended that the capital stock be increased from $1,800,000 to $3,000,000 to cover the cost of the improvements and additions. Details of the enlargements are now being worked out.

The Russell & Erwin Mfg. Co. has awarded a general contract for a six-story factory building to be erected at New Britain, Conn. The building will be of reinforced concrete, 60 x 100 feet.

The Farrel Foundry & Machine Co., Ansonia, Conn., is making some improvements to its plant, including a new crane runway.

At the annual meeting of Manning, Maxwell & Moore, Inc., New York, the retiring directors were re-elected the present officers were re-elected.

The Quincy Mining Co. has declared the regular quarterly dividend of $1.50 and an extra dividend of 50 cents per share.

CINCINNATI.

Heavy Snow Causes Delay in Shipments—Outlook for Trade is Good.

Office of THE IRON TRADE REVIEW,
N. E. cor. Fourth and Elm Sts., Feb. 21.

Trade in all branches has suffered considerably as a result of the blizzard that has held the city within its grip during the past three or four days. Transportation companies of all kinds have been seriously handicapped and shippers have been compelled to resort to all manner of means in order to deliver consignments of freight on anything like schedule time. Machine tool builders with others have felt the ill effects incident to this condition in a general way but more particularly in the delay occasioned by the delayed receipt of castings, supplies and material generally. This has caused a slight falling off in production and the total of the week's business is below the average. The outlook, however, for an increased volume of trade is said to be excellent and builders along all lines of tools, feel that more activity and a firmer tone will certainly develop within the next few months. Milling machines, lathes and radials continue to be foremost on the active list with some slight tokens for the better along general lines. Special tools, such as electrical drills and grinders, are in strong demand and manufacturers are figuring on more room in order to increase the output of their plants.

The Bradford Machine Tool Co., Evans street, reports a fairly satisfactory volume of trade with a little more general inquiry for its tools.

The J. B. Morris Machine Tool Co. was incorporated at Columbus this week by George McG. Morris, Samuel M. Blackburn, George H. Stearns and Alfred K. Nippert; capital stock, $125,000. This company will take over the machine tool business of the John B. Morris Foundry Co., of this city, and will manufacture lathes and radial drills exclusively. The new company will erect a one-story concrete building of about 30,000 square feet capacity on the ground now owned by it at Court and Harriet streets, and will employ about 200 men when in full operation. George Morris is president of the new company, and S. M. Blackburn, secretary.

The United States Electrical Tool Co., West Eighth street, manufacturer of electrically driven drills and grinders, reports a steadily increasing demand for drills from automobile industries and for grinders from the various classes of machine shops. Several new lathes have recently been added to the equipment of the plant and additional floor space will soon be a necessity to meet the demands of trade.

The Cincinnati, Hamilton & Dayton Railroad Co. has ordered 500 all-steel gondola cars from the Pressed Steel Car Co., 500 from the Ralston Steel Car Co., and 500 steel box bars from the American Car & Foundry Co.

The Louisville & Nashville Railroad Co. is planning the erection of extensive shops at Boyles, near Birmingham, Ala. There will be nine separate buildings, including a power house. The probable cost of the improvements will be close to $650,000.

BUFFALO.

Outlook is Good for a Long Season of Activity in Machinery Trade.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Feb. 21.

Machine tool builders and makers of special machinery are crowded with orders and behind on deliveries as a general thing. They feel that the activity is of a more permanent character than anything of the kind in several years past. Substantial evidence of this is found in the building projects of manufacturng plants, many of which have decided to increase their capacity. In not uncommon cases such plans call for double capacity.

Included among those having provided for increased business, which have been previously described, are the Otis Elevator Co., Buffalo Foundry & Machine Co., Niagara Tool & Machine Co., Snow Steam Pump Works, Acme Malleable Iron Co., King Sewing Machine Co., E. R. Thomas Motor Co., Pierce-Arrow Motor Car Co., Sterling Engine Co., Willet Engine & Carburetor Co., American Malleable Co., Standard Foundry Co., Augustine Automatic Rotary Engine Co., all of Buffalo, besides a number of entirely new projects.

The public service commission has consented to the plans of the Cliff Electrical Distributing Co., Niagara Falls, N. Y., which includes authorty to increase its capital stock from $25,000 to $500,000 in order that it may act as distributing agent of the Niagara Falls Hydraulic Power & Mfg. Co., whose franchises it will acquire.

The automobile show was held at Broadway arsenal, Buffalo, Feb. 14 to 19. Exhibitors included a large number of the leading motor car manufacturers, but accessory exhibitors were not numerous this year. Exhib-

its of motor trucks were more conspicuous and notable innovations in this direction were observed at the show.

The Niagara & Erie Power Co. has applied for permission to acquire certain property and franchises of the Niagara, Lockport & Ontario Power Co., and the Buffalo & Lake Erie Traction Co. The Niagara & Erie Power Co. was organized to deal in the transmission of electrical power and expects to build power transmission lines through Erie and Chautauqua counties in New York state, and Erie county, Pa. The Niagara, Lockport & Ontario Power Co will transfer a part of its business to the Niagara & Erie Power Co.

The American District Steam Co. will build a large machine shop at Tonawanda.

The Automatic Coin Wrapping Co. has been incorporated with a capital of $1,200,000 and will build a manufacturing plant at North Tonawanda, N. Y.

Contracts have been let by the United Indurated Fiber Co., Lockport, N. Y., for three two-story concrete buildings, 200 x 100 feet. This plant was lately acquired by the H. Johns-Manville Co., and it is now planned to make asbestos articles in addition to fiber at the Lockport plant.

Incorporation papers of the Hercules Waterproof Cement Co. have been filed at Buffalo, capital $100,000. Plans of the company have not been made known. Directors are Charles F. Peters, J. Louis Seligman, Henry C. Hutchinson, Charles Kuhn and Philip A. Sullivan.

The Herschell-Spillman Co., North Tonawanda, N. Y., has a rush order for 500 automobile motors. The company has completed an addition to its testing house at factory No. 2.

The Buffalo Chamber of Commerce and Manufacturers' Club is about to create an industrial bureau, associated with an underwriting syndicate for the purpose of inducing new industries to locate at this point. It is also proposed to establish a bureau of manufacturing to co-operate with Buffalo concerns in helping in every possible way to develop their business and protect their interests.

The Brown-Lipe-Chapin Co., Syracuse, N. Y., capital $1,500,000, organized to manufacture differential gears for automobiles, will build a plant at Syracuse, using reinforced concrete construction. This firm will take over the differential gear department of the Brown-Lipe Gear Co., the latter having found it advisable to separate its differential gear business from its transmission and steering gear department. The business of the Brown-Lipe-Chapin Co. will be managed by H. W. Chapin, who for the past 15 years, has been manager of the Brown-Lipe Gear Co. Mr. Chapin will also be general manager of the Brown-Lipe-Gear Co. The stockholders of the Brown-Lipe Gear Co. will hold a controlling interest in the new corporation, the only other stockholder being C. S. Mott, of the Weston-Mott Co., Flint, Mich. The new plant will be fireproof, six stories, costing $150,000. It will be occupied July 1, with estimated capacity of 250,000 differential gears.

NEW BUILDING

Is Being Planned or Completed by Wisconsin Concerns.

Milwaukee, Feb. 21.—Several of the large machinery manufacturing concerns of the state located outside of Milwaukee are either building new additions at this time or have announced plans for extensions to be made in the near future.

The C. Mattison Machine Works at Beloit, Wis., will erect an addition to its building early in the spring as the result of a heavy business and the introduction of several new lines of manufacture. The new addition will be 80 x 30 feet, two stories, and of fireproof construction.

The American Seating Co. will expend $75,000 in improvements at its Racine, Wis., branch this year. A brick and steel power house, 50 x 70 feet, will be erected and new boilers of 500 horsepower will be installed. New dry kilns will be erected and it is probable that a new brick office structure will be built.

Involving the property rights to Jones island, now controlled by the Milwaukee branch of the Illinois Steel Co., Judge J. K. Parish of Ashland, Wis., sitting in Judge Halsey's court at Milwaukee, has decided in favor of the residents of the island, holding that the Illinois Steel Co. has no claim to the property. The court held that the alleged squatters had cleared their right to the land. This is the beginning of the end of a famous case that has held the courts of Wisconsin for fifteen years.

The Nordberg Mfg. Co., of Milwaukee, has filed amendment to its articles of organization, changing the number of directors from five to seven.

Several important matters will be up for discussion at the second annual convention of the Engineering Society of Wisconsin, which will be held at Milwaukee, February 23-25. Twenty papers will be read during the session. Headquarters will be at the Plankinton house.

E. Charbonneau, proprietor of the Twin City Iron Works, of Hurley, Wis., has denied the report that he will move his entire plant to Iron River, Mich. The plant to be established at Iron River will simply be a branch for which a site has already been secured.

A recent meeting of the stockholders of the Globe Iron Works at Grand Rapids, Wis., resulted in the election of the following officers: President, T. B. Wilson; vice president, H. W. Young; secretary and treasurer, F. E. Watkins; directors, T. B. Wilson, H. W. Young, J. J. Flather, Albert Dollenmayor, W. C. Ribenack, W. A. Clark and F. T. Watkins. A movement is under way to place the company on a sounder financial footing.

The Racine Iron & Metal Co. is using a hydro-oxygen machine in its work of clearing up the ruins at the burned plant of the Racine Mfg. Co. at Racine, Wis.

In order to provide for a later extension of its plant, the Gardner Machine Co., of Beloit, Wis., has purchased considerable land adjoining its present plant.

The J. I. Case Threshing Machine Co., of Racine, Wis., has been obliged to curtail the output of its engine department from twelve to four engines daily because of the fact that it is unable to secure castings and other material from the east in sufficient quantities.

Announcement has been made that the Eagle Mfg. Co., of Appleton, Wis., will increase its capital stock from $6,000 to $200,000 and engage in the manufacture of a high class automobile. The present plant of the Eagle company will be utilized, together with several additions for which plans have already been completed. The Saiberlich engine, manufactured by the Eagle company, will be installed in the new automobile. W. D. Legge will be superintendent of the new operations of the company. Present plans are that the present working force of the plant will be increased to 200.

Efforts are being made by capitalists of Appleton, Wis., to induce William Besserdich, of Clintonville, Wis., who holds patents on a new double drive automobile, to move his plant to Appleton and manufacture his machine on a large scale.

CORPORATION TAX.

Information Which Must be Furnished Before March 1.

Office of THE IRON TRADE REVIEW,
Post Bldg., Washington, D. C., Feb. 21.

With the first of March now so short a time away, inquiries are constantly coming to the United States commissioner of internal revenue from manufacturing corporations and others regarding the details of the information desired by the government in connection with the assessment on the net income of a corporation under the federal statute.

The commissioner of internal revenue has given notice through all the collectors of internal revenue in the country that the details of the prescribed return of the incomes of corporations for the calendar year 1909 must be sent in before March 1, 1910.

Blanks have been sent to all forms of corporations, presumably subject to the tax. Some of the points from one of these blanks serve to illustrate in detail what is to be furnished by the manufacturing and kindred corporations under the terms of the law.

The returns to the government must show the net income of the corporation received during the year previous; the total amount of paid-up stock outstanding at the close of the year; the total amount of bonded or other indebtedness outstanding at the close of the year; the gross income of such corporation.

These points relate to the income, and with respect to the gross income it is explained in a note covering that point: "The gross income received during the year from all sources shall in the case of a manufacturing corporation consist of the total amount ascertained through an accounting that shows the difference between the price received for the goods and the cost of such goods as manufactured. The cost of goods manufactured shall be ascertained by an addition of a charge to the account of the cost of the goods as manufactured during the year, of the sum of the inventory at beginning of the year and a credit to the account of the sum of the inventory at the end of the year. To this amount should be added all items of income received during the year from other sources, including dividends received on stock of other corporations, joint stock companies, and associations subject to this tax. In the determination of the cost of goods manufactured and sold as above, such cost shall comprehend all charges for maintenance and operation of manufacturing plant, but shall not embrace allowances for depreciation or losses, which items shall be taken account of under the proper heading above as a deduction."

With respect to the deductions upon which a statement is required from the corporation they are designated as follows:

Total amount of all necessary expenses of maintenance and operation of the business and properties of the corporations. "The deductions authorized shall include all expense items under the various heads acknowledged as liabilities by the corporation making the return and entered as such on its books from Jan. 1 to Dec. 31, of the year for which return was made." The total amount of losses sustained Jan. 1 to Dec. 31; total amount of depreciation during the same period; total amount of interest during the same period on bonded and other indebtedness to an amount not to exceed amount of paid-up capital at the close of the year; total taxes paid during the year imposed under authority of the United States or any state or territory; foreign taxes paid.

Following these deductions there is to appear as a part of the report made by the corporation the net income; specific deduction from net income allowed by law, namely $5,000; amount on which tax at 1 per centum is to be calculated.

Accompanying this detailed statement, as a part of it, the president and treasurer of the corporation are required to make oath as to the correctness of the statement made. This statement is required to be subscribed and sworn to by both of these officers.

BACKBONE OF BETHLEHEM STRIKE BROKEN.

Most of the union organizers have left and the belief is general that the backbone of the strike at the plant of the Bethlehem Steel Co. has been broken. The hope of the strikers that the drop forge workers would aid them by joining the strike finally collapsed when the company granted the demands of these employes for a 10 per cent wage increase. The demands of the electrical workers, it is also reported, are to be granted by the company.

A number of mining plants in the locality of Joplin, Mo., were compelled to close, Feb. 16, because of the heavy blizzard.

FINANCIAL PLAN

Of Lackawanna Steel Co., as Approved by Stockholders, is Outlined.

Details of the financial plan formulated by the directors and recently approved by the stockholders of the Lackawanna Steel Co., are given in the following statement issued by the company:

The $10,000,000 consolidated mortgage bonds now to be issued, constituting series A, are to be dated March 1, 1910, and are to be convertible at the holder's option into common stock at par at any time between March 1, 1912 and March 1, 1922. They are to be a part of a total authorized issue limited to $35,000,000, payable March 1, 1950, of which $15,000,000 bonds are to be reserved to take up the outstanding $15,000,000 first mortgage bonds at or before maturity in 1923; and $10,000,000 are to be reserved for future issue, for the purchase of additional property improvements, betterments and other corporate purposes.

The $10,000,000 debentures are to be dated March 1, 1910, to be payable March 1, 1915, to be redeemable in whole or in part at par and interest at any time after March 1, 1913, upon 60 days' notice, and are to be convertible at par at the holder's option at any time after March 1, 1912, into 7 per cent cumulative preferred stock, the creation of which has also been authorized by the stockholders. This new preferred stock may be redeemed or retired at the option of the company at 115 and accrued dividends on 60 days' notice and may be increased only with the consent of the holders of two-thirds in amount of the stock at the time outstanding. The present stock of the company becomes common stock, of which there is a sufficient amount available to provide for the conversion of the first consolidated mortgage bonds.

Present stockholders have the privilege of subscribing up to two-sevenths of their holdings for the $20,000,000 new bonds, at 85 per cent of their face amount for the first consolidated fives and at 95 per cent of their face amount for the 5 per cent debentures, payment of subscriptions to be made, 25 per cent at the time of subscription and the remainder on March 1. Speyer & Co. have agreed to purchase so much of the $20,000,000 bonds as may not be subscribed for. Demand for participation in the underwriting has been large both from this country and abroad.

At the prices at which they are offered to the stockholders, the first consolidated mortgage bonds and 5 per cent convertible debentures, respectively yield 6.75 per cent and 6.18 per cent, if held to maturity.

By this new financing the Lackawanna Steel Co. will be provided with funds to meet the maturity on March 1, of the $15,000,000 5 per cent notes, and will have a balance of approximately $3,000,000 to devote to improvements and extensions.

BOSTON BRANCH

Of N. M. T. A. Will Hold Annual Meeting—News Notes.

Boston, Feb. 23.

The annual meeting of the Boston branch, National Metal Trades Association, will be held on Wednesday, March 2, at Young's hotel. The business session will be preceded by a dinner. Nominating and auditing committees were appointed at the February meeting. Several matters of importance are to be discussed and plans for attending the annual convention in New York on April 13 will be talked over. Every effort is being made to secure a large attendance.

The report of the employment bureau of the Boston branch of the National Metal Trades Association for December and January, recently published by the secretary, D. F. S. Clark, shows results said to be satisfactory to the association. In December, there were 323 applications, and out of 120 sent, 42 were hired. For January, there were 294 applications, 22 being employed out of the 73 sent.

The Boston Gear Works, at Norfolk Downs, Mass., near Boston, whose plant was burned Nov. 29 of last year, entailing a loss of about $50,000, was reopened with an informal exhibition of the factory to a large number of invited guests on Feb. 22. A large party of members of the trade left Boston at 10:27 a. m., spending an interesting hour in being shown over the factory. The complete re-establishment of the plant within two months after its destruction was favorably commented on by the members of the party.

The 14 crafts employed in the mechanical shops of the New York, New Haven & Hartford railroad have asked for a wage increase of 6 cents an hour and the establishment of the 8-hour work day on a permanent basis. In all 15,000 men are interested.

Stockholders in the Ames Plow Co., of Boston, ratified the organization of a new corporation at a meeting in Boston on Feb. 17. The new concern will have an interest in the John Deer Plow Co. and the Haskell Implement & Seed Co. Frederick B. Hill was re-elected treasurer, and Melville H. Rowell was chosen assistant treasurer, a new office. These directors were named: Oliver Ames, Louis Watjen, S. E. Nash, Huntington Saville, Gustave Magnitzky, A. M. Chandler, Frederick B. Hill and Charles A. Stone.

The return of Rear-Admiral Bowles, of the Fore River Shipbuilding Co., at Quincy, Mass., was celebrated Wednesday night, Feb. 23, with a reception to him by a committee of 100, of which Mayor William T. Shea was chairman. With one of the two dreadnought battleships of the Argentine Republic, to be constructed at the plant, and with two scout cruisers for the Italian navy, soon to be under way, something over $20,000,000 of business will be done at the great works in the next four years. The metal trades of Boston benefit directly thereby.

The machinery trade of Boston is watching closely the development of the crusade being carried on by the machinists' union here, to establish standard minimum rates for the craft in Boston on and after June 1. An open meeting was held Friday night, Feb. 18, to form a new lodge of toolmakers, and an open mass meeting for machinists is scheduled for next Friday, Feb. 25. The proposed union scale is:

Specialists, men who operate automatic machines or men who can run only one machine, $3 per day; general machinists, $3.50 per day; toolmakers and diemakers, $4 per day.

CONSTRUCTION WORK BEGUN ON NEW PLANT.

Work has been started by the Velte Foundry & Machine Co. on the foundation for its new plant to be built at Mars, Pa. The buildings to be erected are: Gray iron foundry, 60 x 200 feet; machine shop, 50 x 100 feet; pattern shop, 50 x 100 feet; power house, 50 x 75 feet; office buildings. It is expected that the works will be in operation by May 1.

The company recently sold its Lawrenceville (Pittsburg) plant to the Heppenstall Forge & Knife Co., Pittsburg, and the capacity of the new plant at Mars will be about double that of the Lawrenceville works. The foundry will have a capacity of 25 tons of castings per day. The company makes a specialty of Sieman gas valves, furnace castings, gas engine castings, sewer drop castings, sand dryers and brake shoes for street railways. It was incorporated in 1876.

CONTRACT FOR INDUSTRIAL RAILWAY.

A contract for an industrial railway, one mile in length with branches encircling the Irondale steel plant of the Western Steel Corporation, has been let to E. P. Jamison & Co., Seattle. The contract provides for a track of 24-inch gage fitted with 35-pound rails. The initial equipment will include two oil-burning locomotives and 50 billet cars. The plant also includes electric cranes, by means of which the billet cars will be loaded and unloaded.

SEVERE WEATHER

Has Caused Slow Progress at Gary—May Build 160-Inch Plate Mill.

Much of the new construction work at the plant of the Indiana Steel Co., at Gary, Ind., has been hampered by the severe weather of the past winter. This has been true, particularly, in regard to work on the Koppers by-product coke ovens, the plate mill, axle mill and the 12-inch and 10-inch merchant mills. The 18-inch merchant mill has been in operation for several weeks, but difficulties have been encountered in adjusting the working of what is practically the first merchant mill to be operated continuously, that is, that the progress of the bloom, through its various reductions, down to the finished shape, is continuously forward. The 14-inch mill is expected to start by the first of March, but the starting of the other mills is an indefinite matter, as yet. The question of building a 160-inch sheared plate mill, which is part of the Gary program, has not been thoroughly worked out.

Of the various plants which are to be located at Gary, only that of the American Bridge Co. has reached the point of breaking ground. Some of the others will be deferred some time. The interests which have secured locations, either within the limits of the Steel Corporation's property, or in the town, include, in addition to the bridge company, the American Sheet & Tin Plate Co., the American Steel & Wire Co., the American Car & Foundry Co., the American Locomotive Co., and the Pittsburg Bolt & Screw Co.

In order to have a more definite property line, the Grand Calumet river is to be straightened by the removal of four bends, and, ultimately, this river will be a part of a navigable canal, having two outlets into Lake Michigan, one of which will be at the plant of the Inland Steel Co., at Indiana Harbor, and the other at South Chicago.

It has been decided to carry out, as originally planned, the 15,000-car freight yard at Gary. Some changes in the original plans for the yard were proposed, to provide a location for some of the other interests which are to have plants there, but different arrangements were made, and the freight yard will now be pushed forward to completion on the lines originally laid down.

THE EIGHT-HOUR DAY IN SAN FRANCISCO

Joseph J. Tynan Takes Gloomy View of Outlook if Agreement With Labor Unions Continues—Experiences of the Union Iron Works.

In a recent address read before the Commonwealth club of San Francisco, Joseph J. Tynan, general manager of the Union Iron Works Co., took the position that the continuation of the agreement made between the California Metal Trades association and the Iron Trades Council of San Francisco in 1907 for the eight-hour day would eventually wreck the iron, steel and allied industries centered around San Francisco bay. The agreement expires June 1. Before entering into a general discussion of the subject, Mr. Tynan answered an argument frequently made to the effect that the molders, pattern makers, machinists and boilermakers ought to have as good wages and hours in San Francisco as are granted to workers in the structural trades, by pointing out the fact that structural work can be done free from competition from other centers while work of other kinds can be shipped in from cities where the ten hour day prevails, and ships can be built on the Atlantic and sent around the Horn. Mr. Tynan then said:

In order to show clearly the great disadvantages under which the western shipbuilder labors in an effort to obtain a fair portion of the business of building ships for the ocean carrying trade in competition with shipbuilders on the Atlantic seaboard, let us take as a concrete example the comparative costs of a single screw steel steamer, of say 6,000 gross tons, to be built for freight carrying purposes. Let us also assume, for the sake of argument, that such a vessel could be built on the Atlantic coast for $500,000.

High Freight Rates.

In the construction of a vessel such as we have just described there would be used about 3,000 tons of steel plates, shapes and forgings, all of which must be obtained from the steel manufacturing centers which are much nearer to the Atlantic than to the Pacific coast, and the first handicap which the western shipbuilder experiences is in the cost of laying down the raw material at his yard. The average freight rate from the steel mills to ship yards on the Atlantic coast is not more than $3.00 per ton, while to the Pacific coast the average rate is about $13.00 per ton. Assuming then that both purchase their materials at the mill at the same price, there is a difference of about $10 per ton in the cost of this material laid down in the ship yards; and in the total cost of our 6,000 ton vessel this difference would amount to about $30,000. This item alone brings the cost of this vessel up 6 per cent higher on the Pacific than on the Atlantic coast.

Let us further assume (and this assumption is nearly correct), that our assumed cost of $500,000 would be about equally divided between material and labor.

According to Bulletin No. 77 issued by the bureau of labor, the average rate of pay in the ship building trades on the Atlantic coast is 25.37c per hour and on the Pacific coast is 36.33c per hour. The average rate of wage on the Pacific coast is therefore 43 per cent higher than on the Atlantic coast.

The general operating expenses in all ship building establishments bear nearly a fixed relationship to the productive labor, and in that case the cost of production will vary directly with the average rate of pay.

Difference in Cost.

Returning to our 6,000 ton freighter and considering only the additional cost of raw materials due to the greater cost of transportation and the difference in wages paid; we find that while our eastern competitor can obtain all his materials for this vessel at a cost of about $250,000, we on the Pacific coast have to pay about $280,000 for the same commodities, and while his labor cost will approximate $250,000, ours will be about $357,500, or, as compared with a total cost of $500,000 on the Atlantic seaboard, the total cost on the Pacific would be about $637,500; or, about 27½ per cent greater.

While there are a number of other features of the ship building industry in which the conditions are different on the Atlantic and Pacific coasts, some favoring the east (and among these may be mentioned quicker delivery of raw materials, cheaper purchase price of certain finished parts of the vessel), and some favoring the west (these are principally cheaper lumber materials and more favorable climatic conditions); it will be found that these latter differences will offset each other and that active competition is practically barred by the difference in cost of raw steel materials and labor. A ship of this type, therefore, could not only steam to the Pacific coast as quickly as the raw material could be delivered, but earn a profit on the voyage out.

While the foregoing applies principally to the construction of vessels for the over-sea trade, it is no less true of smaller vessels built for the coastwise trade, for a cargo from east to west is always obtainable at a rate which will pay at least one-half of the operating expenses of the vessel on a trip to this coast, and the saving in first cost on the vessel if built on the Atlantic coast is more than sufficient to offset the rest.

Other Disadvantages.

Other disadvantages under which the Pacific coast shipbuilder labors is the extreme scarcity of skilled labor in a number of the ship building trades on account of fluctuation in volume of business, as good men will not remain in San Francisco unless they get steady employment. This fact and the slow transportation of materials to the coast enables our eastern competitor ordinarily to complete a vessel and deliver her on the Pacific coast in the same time, if not quicker, than it is possible for us to build her.

More than 50 per cent of the entire fleet of the American Hawaiian Steamship Co. was designed and built on the Pacific coast, and while these ships are the most successful of their class in operation and the ship owner was willing to give us a reasonable differential to build three more ships here, the great difference in cost on the Pacific coast was such as to be prohibitory, and as a result these three vessels are under construction at Baltimore.

As another illustration of the difference in cost I might refer to the steamship Wilhelmina, owned by the Matson Navigation Co. of San Francisco. The owners offered one year ago a differential of $50,000 to have the ship built on the Pacific coast: still, on account of the conditions already referred to, the local shipbuilders were unable to undertake the construction of this ship.

The lumber trade became so brisk a short time after the "fire" that there was a demand for a large number of steel lumber schooners. In nearly every instance the Union Iron Works Co. was the first to be approached regarding the construction of these vessels and in every instance its price was considered prohibitory, and after obtaining figures from eastern shipbuilders it was found they could be built and delivered at San Francisco for about 20 per cent below the actual cost price here, and in practically the same time. There are at present two steel lumber schooners being built at Long Beach, Los Angeles county, where the 10 hour workday prevails, for a much lower figure than any shipbuilder in San Francisco could afford to take them.

A few months ago, the Union Iron Works Co. designed a large steel lumber mill for the Pacific Coast Lumber Co., to be erected at Eureka. This was the first structural steel lumber mill ever seriously contemplated on this coast so far as we know, and in order to insure the proposition going through we agreed to put in our stock material at a figure below market rates and also cut the architectural fee in half in the event of our securing the contract. Notwithstanding the fact that we had a differential of half the arch-

itectural fee and the privilege of working in our own scantlings, which we figured at less than the market rates, the Llewellyn Bros. Iron Works of Los Angeles came to San Francisco and under-bid us to such an extent that the owners had no option but to award this firm the contract.

Fabricating Contract.

A remarkable feature connected with this contract was that the Llewellyn Bros. Iron Works of Los Angeles, purchased from us the same material we intended to work into the building, shipped it to Los Angeles, fabricated it there and reshipped it to Eureka, showing, gentlemen, that the conditions in Los Angeles are in every respect more favorable to the manufacturer than those existing in San Francisco.

At the present moment, the United Engineering Works and the Moore & Scott Iron Works are purchasing several Scotch marine boilers in eastern ship yards, which will be shipped to this coast at a much higher freight rate than the raw material, but not sufficiently higher to offset the difference in wage and length of work-day.

Climatic conditions give us a great advantage in shipbuilding on account of a large amount of work necessarily being done out of doors, and while we have always been in direct competition with the east in the construction of ships, we were, until conditions became prohibitory, able to get our share of the business.

The following table gives the number of vessels built at the Union Iron Works according to decades:

First decade	23
Second decade	62
Last five years	4

The death knell of ship building in San Francisco was sounded by the increase of wages following the disaster of 1906, and the 8-hour day agitation which quickly followed.

What applies, gentlemen, to the ship building branch of our metal manufacturing industries, applies with equal force, to the various other local trades represented. If the 8-hour work-day has come to stay, the manufacturing end of our metal industries must go. Instead of attempting to impose upon our local industries the 8-hour work-day, the question of hours for the metal industries of San Francisco should not be touched upon until first the shorter work-day has become a reality elsewhere. Instead of it being expected that ours shall be the first city in the United States to bear the brunt of this burden, San Francisco metal trades manufacturers should be the very last to be approached in the matter of shorter work-day.

The Dean Mfg. Co., Inc., Newport, Ky., whose incorporation was recently noted, is a combination of the Dean Gas Engine Foundry Co. and the Fox Reversible Gasoline Engine Co. The Dean company is a general founder and manufactures as a specialty the Fox marine motor.

LACKAWANNA STEEL CO. REPORT FOR YEAR JUST CLOSED.

The report of the Lackawanna Steel Co. for the year ending Dec. 31 last, has been made public. It shows the following figures and comparisons with the figures for 1908:

Gross sales:—		Increase.
Earnings	$25,296,661	$10,208,782
Op. expenses, etc.	20,586,838	7,845,237
Net income	$ 4,709,823	$ 2,363,545
Other income	451,430	222,580
Total income	$ 5,161,253	$ 2,585,601
Genl. expenses	692,878	10,363
Balance net	$ 4,468,375	$ 2,575,238
Interest, etc.	2,163,409	83,151
Balance	$ 2,304,968	$ 2,492,087
Sinking fund	406,916	11,951
Depreciation, etc.	1,119,941	375,754
Total appns.	$ 1,526,857	$ 287,705
Surplus	$ 778,109	$ 2,104 382
Previous surplus	3,236.490	*1,326,273
Total surplus	$ 4,014,599	$ 778,109

*Decrease.

The condensed balance sheet of the Lackawanna Steel Co. and subsidiary companies, as of Dec. 31 last, shows total assets and liabilities of $88,219,838, an increase of $2,785,370.

BLOW OUT FOR REPAIRS.

The Alice blast furnace of the Youngstown Sheet & Tube Co., at Sharpsville, Pa., will be blown out in a few days for relining and repairs, when it will be immediately relighted and operated by the Youngstown Sheet & Tube Co. until July 1. After that date, the Youngstown company will transfer the stack to the Thomas D. West Foundry Co., of Sharon, which will operate the stack thereafter. The furnace will be out of blast not more than five or six weeks.

SOME INTERESTING FIGURES ON STRUCTURAL BIDS.

The Sanitary District of Chicago, on Feb. 16, opened bids for 312 tons of structural material for the Sheridan road bridge and the Wilmette Pumping station, for the north shore channel. The Milwaukee Bridge Co. was found to be the lowest bidder, and was awarded the contract. The following figures show the range of bidding on the general contract and the extra material:

Bidder.	Lump sum.	Extra struct. steel.	Extra steel cstgs.	Extra iron cstgs.	Extra bronze and babbitt.
		Cents per Pound.			
Milwaukee Bridge Co.	$22,793	3.90	8.00	4.00	50
King Bridge Co.	22,900	3.50	8.00	6.00	55
Toledo & Massillon Bridge Co.	24 466	5.00	6.00	5.50	50
Wisconsin Bridge Co.	24,662	4.00	10.00	5.00	30
Roemheld Construction Co.	24,785	6.00	10.00	5.00	60
American Bridge Co.	25,000	3.36	9.40	5.95	43
Chicago Bridge & Iron Works	27,442	4.00	10.00	4.00	50

FARMERS DEMAND

Free Trade in Canada With United States on Implements.

Toronto, Feb. 21.

A strong movement toward reduction or abolition of the duty on agricultural implements was inaugurated at the annual convention of the Saskatchewan Grain Growers' Association, held at Prince Albert, Sask., recently, when a resolution was adopted pointing out that whereas Canadian machinery can be purchased in Great Britain at from 10 to 30 per cent less than in the Canadian west, this condition being caused by the Canadian tariff, immediate steps should be taken as regards the tariff so that the home purchaser may be able to buy as cheaply as the outside world; also that the government be asked immediately to accept the offer of the United States of free trade in agricultural implements. After the convention had closed a conference was held with representatives from other provinces and a body entitled the National Council of Agriculture of the Dominion, was organized, in which both eastern and western Canada are represented. The uncompromising attitude of the farmers as regards protection, togther with the increased representation in parliament which the west will shortly secure as the result of immigration, is likely to have an important effect upon legislation before long, if not during the present session.

Dunnville, Ont., on Feb. 14, adopted bylaws authorizing a loan of $30,000 to the Canadian-American Gas & Gasoline Engine Co., on condition of its erecting a foundry and machine shop to cost, with equipment, $45,000, employing 50 men the first year and ultimately 100; and providing a $10,000 site and buildings for the Wilhelm Telephone Mfg. Co., which will employ 25 men.

President William Mackenzie, of the Canadian Northern railway, announces that the company will this year build between 500 and 600 miles of road in the west and make a good start on their British Columbia line.

PERMANENT MAGNETS AND MAGNET STEEL

Results of Extended Experiments on the Retentivity of Different Steels.

The results of extensive experimental work on the above subject by the engineer of Böhler Bros.' Steel Works, Austria, are contained in two recent articles in *Stahl und Eisen,* which are reproduced in condensed form herewith.

Two kinds of steel are demanded from the steel industry by electricians, in building their machinery and apparatus. The first is one that can be easily and quickly magnetized under the action of suitable forces, and when these forces are withdrawn loses its magnetism as completely and quickly as possible. The second is one that after being magnetized, remains unchanged, and retains as much magnetism as possible.

The first material is used extensively in dynamo construction, and must possess small hysteresis with great permeability. Metallography has shown that it must be ferrite, as pure as possible; and of course crystalline structure. The requirements are fulfilled by an iron-silicon alloy with from 2.0 to 3.5 per cent silicon, and very little carbon, 0.0 to 0.10 per cent. An induction curve is given for a 3.5 per cent silicon alloy. Its permeability is 164 compared with 176 for good wrought iron, but its hysteresis coefficient is 40 per cent lower than that of wrought iron. Even when rolled or drawn it shows a strikingly coarse structure, and is seen under the microscope to consist almost entirely of ferrite.

The second material desired is the very opposite. It must have a large hysteresis coefficient resulting in the wished for retentivity, glass hardness, higher carbon percentage, and a very small microscopic structure. While the silicon alloy provides an almost ideal material for dynamo construction, the best steel for permanent magnets has not been decided on. The following experiments deal with the selection of steels for this purpose.

The material for the experiments was partly taken from the miscellaneous stock of Böhler Bros. and was partly made up specially in the crucible furnace. The testing of the steels for permanent magnetism was carried out on finished magnets of the well known telephone magnet type. The shape and size of the magnets is shown in Fig. 1.

For making the magnets a sufficient length of the bar, 20 x 10 millimeters, was cut; heated to the proper temperature, bent and allowed to cool. The legs were then finished to the proper length. Great care was taken in hardening the magnets, because of the importance of the hardness of the steel on the permanent magnetism. The heating was carried out in a gas fired furnace, and the temperatures controlled with two pyrometers. One was a Le Chatelier, the couple of which was placed on the bottom of the furnace between the legs of the magnet; the other was a Féry radiation pyrometer, which gave slightly higher results than the other. The variation, however, was not more than 10 to 20 degrees Cent.

In the succeeding tables the averages of both instruments are given, and show the temperatures at which the steel, 10 by 20 millimeters, gives the greatest hardness and the finest structure. Quenching was carried out either in water or oil. The time interval from the removal from the furnace, placing in a clamp to prevent distortion in hardening, and plunging in the hardening liquid, was from 4 to 5 seconds. The magnets were then ground accurately to size, and magnetized in the usual way by stroking with a strong electro magnet.

They were then tested by means of a

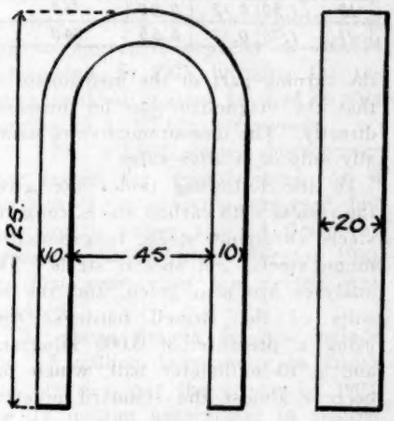


FIG. 1.

Koepsel's magnetometer, furnished by Siemens and Halske. It is comparable to the best of the usual galvanometers. No yoke is used, but the magnet with its keeper is so placed that the legs lie directly around

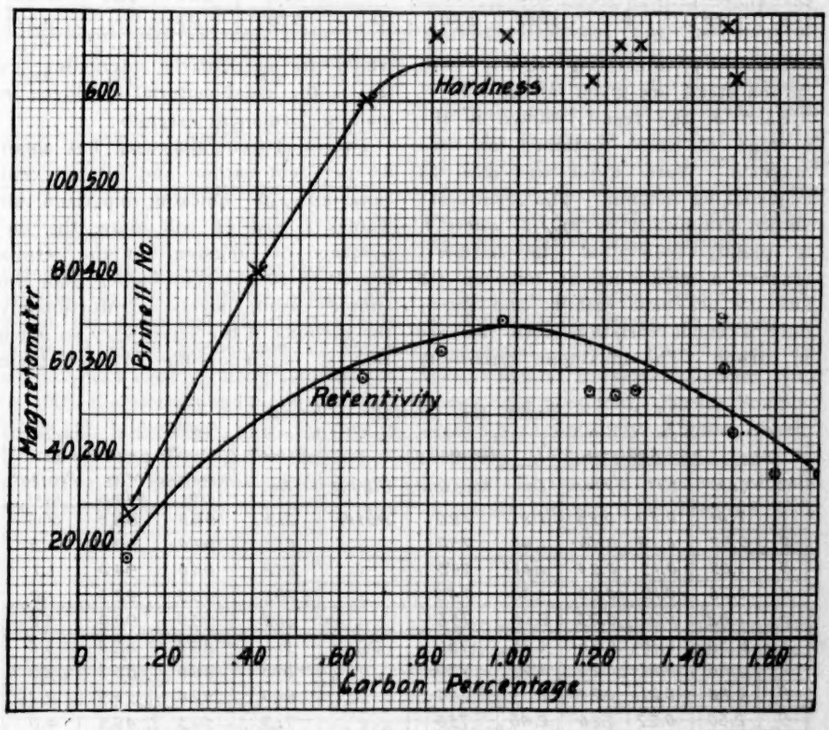


FIG. 2.

*Translated from *Stahl und Eisen* by THE IRON TRADE REVIEW.

TABLE I. CARBON STEELS.

No.	Analysis			Hardening	Brinell	Magnetometer		
	Car.	Sil	Man.	Temp. Cent.	No.	Immediately After	After 8 Days	Per. Cent. Lost
1	0.11	0.016	0.16	880	143	18.0	17.0	5.6
2	0.40	0.10	0.30	860	410	57.5	56.5	3.4
3	0.65	0.15	0.12	850	600	58.5	56.5	3.0
4	0.81	0.08	0.20	820	674	64.5	62.0	3.9
5	0.97	0.20	0.15	810	674	70.5	69.0	2.2
6	1.17	0.18	0.23	780	627	55.5	53.0	4.6
7	1.23	0.17	0.33	780	668	54.5	50.5	7.4
8	1.28	0.18	0.25	765	668	55.5	53.5	3.6
9	1.48	0.20	0.22	755	683	60.5	58.0	4.2
10	1.50	0.12	0.30	750	627	46.0	44.5	3.6
11	1.70	0.12	0.65	740	640	37.5	36.0	4.0

the turning part of the instrument, so that the magnetism can be measured directly. The measurements are naturally only of relative value.

In the following tables are given the results with carbon steels, tungsten steels, chromium steels, tungsten-chromium steels, and special steels. The analyses are also given, and the results of the Brinell hardness test, using a pressure of 3,000 kilograms and a 10 millimeter ball, which has become almost the standard practice.

TABLE II. TUNGSTEN STEELS.

No.	Analysis				Hardening	Liquid	Brinell	Magnetometer		
	Car.	Sil	Man	Tung.	Temp. Cent.		No.	Immediately After	After 8 Days	Per Cent Lost
1	1.15	0.20	0.23	0.68	780	Water	600	69.5	68.5	2.9
2	1.16	0.19	0.20	1.20	750	"	744	76.5	76.0	1.3
3	0.64	0.25	0.26	1.12	820	"	713	76.5	73.5	3.9
4	0.62	0.22	0.20	1.96	800	"	782	83.5	84.0	1.8
5	1.20	0.28	0.29	3.22	740	"	782	66.5	65.0	4.5
6	0.57	0.18	0.26	5.47	930	"	782	90.5	90.5	0.0
7	1.25	0.27	0.30	8.65	930	"	782	61.0	58.5	4.1
8	1.25	-	-	30.00	850	Oil	578	19.0	-	-

The very interesting results with carbon steels are given in Table 1:

Each of the results shown is the average of those obtained on two magnets. Water alone was used as a quenching medium. The results are shown graphically in Fig. 2, where it is plainly seen that the hardness reaches a maximum at between 0.8 and 0.9 per cent carbon, and shows only a small variation with increase in carbon. The maximum retentivity is shown with 0.97 per cent carbon, and with increasing carbon it falls considerably. This is interesting because Madame Curie found the highest retentivity with a steel containing 1.20 per cent carbon. It seems to correspond with a steel of which the structure is pearlite alone. Such a steel, when properly annealed and hardened, shows the smallest possible structure of the carbon steels.

In Table II are shown the results obtained on the tungsten steels, which are particularly interesting, as this is the usual material employed in making permanent magnets.

The steel generally used has about 0.6 per cent carbon and 5.0 per cent tungsten. A quick comparison of Tables I and II will show the importance of tungsten, for the results are 20 to 50 per cent higher than the simple carbon steels. Unfortunately the carbons of the series vary so much that it is impossible to plot them graphically. It seems, however, that the greatest retentivity is obtained with about 0.57 per cent carbon, a much lower percentage than in the case of the simple steels. Chromium has, in general, a similar influence to tungsten as is shown in Table III.

TABLE III. CHROMIUM STEELS.

No.	Analysis				Hardening	Liquid	Brinell	Magnetometer		
	Car.	Sil	Man	Cr.	Temp. Cent.		No.	Immediately After	After 8 Days	Per Cent Lost
1	1.01	0.20	0.25	1.21	720	Water	713	86.0	83.5	2.9
2	0.82	0.19	0.18	1.40	750	"	652	94.0	90.0	4.3
3	1.05	0.15	0.24	1.62	750	"	652	95.0	94.0	1.1
4	0.78	0.19	0.20	1.30	750	"	782	93.5	92.5	1.0
5	1.02	0.21	0.23	2.14	750	"	600	93.0	90.0	3.2
6	0.54	0.18	0.26	4.25	750	Oil	514	84.5	82.0	3.0
7	1.20	0.22	0.25	4.05	730	"	655	86.0	83.5	2.9
8	1.80	0.21	0.24	2.45	760	"	640	55.0	53.5	2.7
9	2.60	0.27	0.26	2.46	750	"	713	50.5	48.5	4.0

Here again it is seen that after the two hardening elements have been added to a certain amount, a further increase causes a loss in the permanent magnetism.

In Table IV are given the results on the tungsten chromium steels, the most interesting of the whole series. Steel No. 3 with 0.96 per cent tungsten and 1.23 per cent chromium gives a result of 97 when tested with the magnetometer, and a loss of magnetism of only 1.5 per cent after 8 days.

Finally in Table V are given the results with steels of various compositions not generally used for making magnets.

The molybdenum steel No. 5 is interesting, as this is occasionally used for magnets. It is of undoubted value, as it is very hard, and of fine structure, but both the tungsten and chromium steels give better results, as well as being cheaper to make.

A comparison of all the series shows that ordinary carbon steels are not of equal value to steels containing some special constituent; that increases the hardness, and the rigidity of the inner structure.

A long series of tests were then carried out on steel No. 6 of Table II, which is known as Böhler's special magnet steel. Its tensile strength in various conditions is shown in Table VI.

Its specific gravity in the rolled condition was 8.13, and when normally hardened 8.08.

A large number of magnets were then made, and two series of tests made. In one series the magnets were heated to varying temperatures, and immediatly quenched. In the other they were allowed to remain at the hardening temperature 10 minutes, then removed and quenched. Both series of tests show the best results when the steel was quenched at about 950 degrees Cent.

Careful microscopic examination of these series shows that the greatest retentivity is obtained with the smallest structure, and the most thorough mixture of the different constituents. This is apparently obtained with a quenching temperature of 930 degrees Cent.

The author then devotes several pages to his theory of the reason why

the special steels give better results than the plain carbon steels. It will not be given here, but is summed up in the following conclusions:

1.—Steel for permanent magnets has the opposite properties, technically and metallographically, to soft dynamo material.

2.—The greatest retentivity of the carbon steels is shown with 0.97 per cent carbon, corresponding practically to the eutectoid percentage. The smaller retentivity of steels with less carbon is due to their lesser hardness; with more carbon because of there being less free iron.

3.—The greater value of the special steels compared with carbon steel for magnets, is due to the presence of more free iron in them with equal hardness.

TABLE IV. TUNGSTEN-CHROMIUM STEELS.

No.	Analysis			Hardening		Brinell	Magnetometer		
	Car.	Tung.	Cr.	Temp. Cent.	Liquid	No.	Immediately After	After 8 Days	Per. Cent Lost
1	1.03	1.25	1.23	760	Water	600	84.0	82.5	1.8
2	1.22	0.96	1.23	760	"	600	97.0	95.5	1.5
3	0.51	1.27	1.05	750	"	578	80.0	—	—
4	1.38	1.33	.66	750	"	627	87.5	85.0	2.9
5	1.32	3.89	.65	740	"	837	84.5	84.5	0.0
6	0.54	10.42	3.52	1100	Oil	837	84.5	82.5	2.4

TABLE V. SPECIAL STEELS.

No.	Analysis		Hardening		Brinell	Magnetometer		
	Car.	Special	Temp. Cent.	Liquid	No	Immediately After	After 8 Days	Per. Cent. Lost
1	0.92	Man. 0.99 Cr 0.43	800	Water	600	71.0	70.5	0.7
2	0.45	Sil 0.94 Cr. 0.78	800	"	578	77.0	74.5	3.2
3	0.50	Sil 0.50 Cr. 1.10 Tung. 1.00 Mo. 1.10	800	"	600	87 0	85.5	1.7
4	0.82	Va. 0.37	800	Oil	946	67.0	64.5	3.8
5	1.22	Mo 3.85	800	"	600	64.0	63.0	1.6
6	0.68	Sil. 1.63 Mn. 0.58	820	Water	782	84.5	82.5	2.4
7	0.10	Sil. 3.70	830	"	226	6.0	6.0	0.0
8	0.95	Man. 12.00	860	"	228	Non	Magnetic	
9	0.20	Mn 0.50	850	"	228	19.0	18.0	5.3
10	0.20	Ni. 5.00	830	"	418	44.5	41.5	6.7
11	0.18	Mn 0.40 Cr 1.00 Ni 4.00	830	"	437	46.0	44.0	4.3
12	0.40	Mn 0.40 Ni 25.00	900	"	131	Non	Magnetic	
13	0.40	Mn. 0.40 Ni 36.00	850	"	145	Non	Magnetic	

4.—The constituents of magnet steels do not influence directly the strength of the magnetism; but, with equal hardness, because of the displacement of a greater or less amount of the efficacious iron.

5.—For equal retentivity it is necessary that the steel be glass hard, of very small even structure, and contain as much free iron as possible. With steels of equal hardness the amount of permanent magnetism is the greater the higher the percentage of free iron.

6.—The steel with about 0.6 per cent carbon and 5.0 per cent tungsten shows the greatest retentivity when quenched in water from a temperature of 930 to 950 degrees Cent.

THE GROWTH OF ELECTRIC POWER.

Great as has been the increase in the application of electric power during a score of years, and even during the past decade, the distributing lines have, as it were, merely skirted one side of the field of scattered prime movers. In the use of power for manufactures the increase of steam is the striking figure. Starting with 1880, about the date that electrical supply began, 2,185,458 horsepower of steam engines was used in manufactures, and in 1905 the corresponding figure was 19,828,111 horsepower, for the entire United States. During this quarter of a century the increase of steam power was thus 400 per cent, or the total was five times as great in the later as in the earlier year.

Besides the steam plants, gas and gasoline engines used in manufactures had an aggregate capacity of 289,514 horsepower, in 1905, bringing the total capacity of engines devoted to this purpose to 11,117,625 horsepower.

In 1905, 441,592 electric horsepower was rented for manufactures, or 4 per cent of the engine power used, but this electric power was 2.4 times the figure of 182,562 horsepower for 1890, the first year when the electric was reported.

The above figures do not include the 2.7 million horsepower in mines and quarries, per the census of 1902, the 0.8 million horsepower in custom flour, grist and saw mills, per the census of 1900, or the electric railways, light and power stations, and the steam railroads.—*Electrical Review and Western Electrician.*

ELECTRIC POWER FROM COKE OVENS.

An electric generating station, to utilize the waste heat from coke ovens, has recently been built at Bankfoot, Durham, England. The equipment includes two Parsons turbines driving machines which feed into the main distributing system. It is understood that this is one of a number of similar plants installed or contemplated in the county of Durham, where there are a large number of coke ovens available for the same purpose.

The Beck & Corbitt Iron Co., 1238-40 North Main street, St. Louis, at the recent annual meeting elected these officers: President, Charles Niekamp; vice president, Charles Semple; second vice president, August Alwell; secretary, William Niekamp; treasurer, George Kleinschule. These officers constitute the board of directors also.

TABLE VI. TENSILE TESTS.

Steel	Condition	Elastic Limit	Ultimate Stress	Elongation Per Cent	Reduction of Area Per Cent.
No 6	Rolled	126,600	157,880	7.6	34.0
Table II	Annealed at 700° Cent	86,760	128,000	9.3	46.0
	Quenched Oil 700° Cent.	100,990	135,120	11.5	15.0
	" Water 930° Cent	—	192,000	—	—

THE ENGINEERING TRADES ON THE PACIFIC COAST

By George W. Dickie.[2]

For some time I have felt growing upon me the necessity of writing a paper on the above subject; to me the subject is not an agreeable one, nor is it likely to be so to most of those who may listen to me read this paper or read it themselves afterward. My connection with the engineering trade on this coast began in 1870, and still continues. During that period of nearly 40 years, mining machinery and marine engines for our coastwise shipping formed the most important work for our engineering establishments.

The development of the mining industry of California and Nevada brought to the mechanical engineers of the state many problems requiring much original mechanical work in their solution. The treatment of ores required the combination of mechanical skill and chemistry to solve the problems involved, and the many contrivances designed and made here for the extraction of the precious metals from their native matrix of rock made the foundries of San Francisco famous for the machinery required in the treatment of all kinds of ores.

Hydraulic mining, which required large quantities of water to be carried sometimes under great pressure, and at a cost that would make it profitable as a means of dislodging and disintegrating huge masses of earth and gravel, originated the building of riveted iron pipe and the making of the powerful hydraulic nozzles called "giants."

The utilization of mountain streams, where the pressure was more in evidence than the volume, forced the hydraulic engineers into devising simple but effective water wheels that have made water power possible in many regions of our mountain ranges where it was not so by any of our then existing methods.

Between 1870 and 1880 hoisting and pumping works for deep mining were developed in our engineering shops to a remarkable degree, both in size and efficiency. Air compressing also for deep working received much attention from our mechanical engineers; the first two-stage compressors were built in San Francisco. In marine engineering the progress was equally swift; the first triple expansion engine built in the United States was built here. The first quartz mill that went into South Africa was a product of our designing and constructing skill.

Thus it will be seen that during the last 30 years of the nineteenth century there was no lack of engineering enterprise amongst us, but during the past ten years there has been a great falling off in the mechanical engineering work done here.

Establishments that employed thousands of men are practically fallen into idleness, while the machinery importing houses have enlarged their business and are not only selling machines produced in other states, but are planning and carrying out machinery installations that were not considered within their scope a few years ago. The suddenness of the decline, and in some instances total extinction, of what were flourishing industries a few years ago has bewildered many of those who looked upon these industries as a permanent part of the achievement, resulting from 60 years' endeavor, of the able men who brought them into existence.

The Beginning of the Decline.

The writer began to see the dangers confronting these industries about 1896, and warned those interested. The first symptom was a general condition of unrest among the men; wages were higher here than in any other state,—at least as much higher as to make up for the cost of transportation of machinery made elsewhere,—yet the leaders were able to persuade the men that any demands they made would be allowed after a show of fight. In this way their minds were poisoned to such an extent that for several years, or up to 1901, the conditions were very trying. Men became indifferent, and what work they did, like all work forced from unwilling hands, was badly done and cost much more than it did when the men were doing it under normal conditions; this prevailed to such an extent that the great strike of 1901 was accepted by the employers as a relief from conditions that had become intolerable. This strike in the metal trades lasted about 11 months and both sides were exhausted, neither side ever fully recovered. A large part of the business that naturally belonged to San Francisco engineering works went permanently into the hands of the commission houses representing establishments in the other states, which could lay down machinery here, with freight and commission added, at less cost than it could be made for here. This condition has been aggravated by the conditions following the disaster of 1906, the effort to recover from which, while demonstrating the courage of our citizens, has still further intensified the difference in cost of manufacturing here as compared with other states.

The opening of the Panama canal will have an important influence on the cost of transporting machinery from other states where it is manufactured under different conditions, economic and otherwise. This event will be powerful in forcing conditions here into correspondence with conditions in other states; either this correspondence will ensue, or engineering establishments on this coast will have to be abandoned. It is to be hoped that another destiny awaits us as the future opens up opportunities, and that some way will be found to enable us, those who work with hand and those who work with brain, to unite in some method whereby we shall be able to produce work of all kinds as cheaply as other states of the union, under conditions that will raise the status of the workman and at the same time give remunerative employment to the brains and capital of our people.

In the eastern states much has been done of late among the metal trades to render the workmen more efficient and thereby increase their product. The principal improvement has been in the science of cutting metals. The high-grade steel now used in the construction of machinery has brought about a great change in the methods of shaping the blanks that come from the forge. Fine smithing is no longer profitable, and rapid cutting has taken the place of skillful hammering. A great many of the establishments in the east have adopted tools and methods of handling them that leave us far behind. The progress made of late years in the art of cutting metals is one of the marvels of this age of steel. In this country no one has done more to develop the science of metal cutting and the art of applying it in the shop than Fred W. Taylor, of Philadelphia. In this work he has been ably seconded by such men as Mr. Barth and Mr. Gantt. After an immense amount of labor and experiment, extending over several years,

[1]Abstract of paper read before the Technical Society of the Pacific Coast.
[2]San Francisco.

these men have been able to produce practical solutions of the mathematical problems growing out of the laws governing the effect on the final result of the conditions under which the work is done.

Out of this research has grown what is known as the instructor, task and bonus system, which has been adopted with very satisfactory results on the economy of production by many shops in this country. A manager who understands and can use this system is enabled to determine the possible work that he can get out of every tool in his establishment and to determine on the best tool to get when he adds to his plant. The majority of people, however, including managers, foremen and workmen, prefer to work at the speed and in the manner they have been accustomed to, and it requires some kind of stimulus to change the methods that are in use.

The Premium System.

The inertia of men in all departments of an engineering establishment, from the manager down to the humblest laborer, is the principal object that stands in the way of any system that demands continual alertness in making the most of every minute of time; hence the necessity of a bonus or reward for every one interested when the task that has been set after careful experiment has been accomplished; but in reaching the standard time required for any job or task, the possibility of rapid accomplishment must be demonstrated in detail to the workmen by an expert who can actually do every part of the task within the standard allotment for each part. This man is the instructor. When a workman succeeds in completing his task within the time set for it, he is entitled to a bonus, which is usually from 20 to 50 per cent of that time; if he takes more than the allotted time, he gets only his regular pay. In setting these tasks it is customary to specify the manner of performing all the operations and to supply the proper tools to the workman; this requires a highly trained staff to insure success. Mr. Gantt claims that when 25 per cent of the workmen are bonus men, they, with those who are striving to become bonus men, control the sentiment and a strong spirit of co-operation develops, and this spirit of living up to the standard set by an expert which is the only way that a bonus can be earned, benefits the employer by the production of more work, better work, cheaper work; it benefits the workmen by giving them better wages, increased skill, better habits of work and more pleasure and pride in their work; this latter benefit to the employe is even more of a benefit to the employer, for it insures good work.

This system has been extensively adopted in the eastern states and has generally resulted in a larger and better product produced at lower cost, while the earnings of the workmen have been increased.

That the system outlined above can be adopted in the engineering shops on the Pacific coast is open to argument. Where manufacturing is done on such a scale that thousands of the same piece have to be produced, giving an opportunity for careful experiment to determine what should be the standard time for its production, and where the cost of such experimenting and the expert's time would form a very small percentage of the cost of production, such a system will show great economical advantages; but where new problems come up every day, and manufacturing in the sense of duplicating parts by the thousand does not exist, the system so successfully developed by Mr. Taylor and his associates will not show any advantage; this latter condition is the prevailing one on the Pacific coast, where, under present conditions, it is impossible for our shops to compete in any line of business that can, because of wider markets, be carried on in the East as manufacturing.

Not Suited to Miscellaneous Work.

The system is also defective because it cannot be applied to the general work of a shop, except, perhaps, in the assembling of small machines that involve only the work of one man on each task, or subdivision of the work involved; where the assembling of large machines, or engines, involving the work of many hands, forms a large part of the work of an establishment, the task and bonus system cannot be applied, for it would be impossible to compute a standard time for each workman and set him a task; in such cases a standard would have to be set for a number of men collectively, and should they fail to meet the standard set, they would collectively lose the bonus, although individually they might each have been capable of doing their proportion of the task. I believe that the application of this system must be largely, if not entirely, confined to the work done on machines that are especially adapted to the work in question, and where the work is the duplication, in large numbers, of pieces that can be standard in form and dimensions and also in quality of material.

A knowledge of the working of such a system should, however, be of great value to the manager of a general engineering works, as it would enable him in making estimates of the cost of work to determine, with some approach to exactness, what should be the possible efficiency of his tools on different classes of work; a careful study of what is possible for every tool, and every man in the establishment should be always available to the manager of an engineering shop if he is to keep abreast of the possibilities that lie within his management. Such knowledge is worth much labor and experimenting to find ont, and is really the foundation of all correct estimating.

Tool Conditions Known Quantities.

The tool part of this problem, in conjunction with the operator, is, with our present knowledge,—thanks to Mr. Taylor and others in the same field of research,—to a certain extent solvable. The cutting power and endurance of tool steels, the possible speed under known conditions, the pulling power of belts, how these are affected by the character of the material operated on, and all the variables that enter into that part of the problem, the labors of such men as Taylor, Gantt, Barth and others have brought within the scope of the ordinary manager's ability, and they can be figured out with a reasonable degree of accuracy. ut how about the other men that don't work with tools that have known speeds and adjustable feeds? In the general engineering works they outnumber those on tools at least three to one. The work of this other man is the unknown quantity in all estimates of labor; the only certain thing about him is his rate of pay per hour or day, the work to be accomplished being an unknown quantity and the purchase of the man's time being only an option on something the amount of which will only be known after delivery. As the labor part of any estimate for machinery will be from 40 to 80 per cent, depending upon the simplicity or complexity of the work, and as the rate of wages is considerably higher than it is in the eastern states, and with a much more contracted market, cutting out manufacturing in the economic sense, how is it possible for our engineering establishments to reach and

maintain a satisfactory place in the industries of the Pacific coast?

From a long experience and after much study I reached the conclusion some fifteen years ago that there was only one solution to this problem if such industries are to live and prosper, and that lies in an entire change of attitude towards each other, of the employer and the employed. They must become partners in the labor part of every estimate. The advancement in general education, with the opportunities open to every one for acquiring knowledge relating to technical subjects, enables the workman to understand estimates made for the work they are engaged in. I think that it is safe to say that from a body of workmen employed in any of our engineering establishments there could be selected men to represent the body to which they belong that would, in a very short time, be just as competent to estimate on the labor cost of machine work as the manager of the works or any other officer that does the estimating; they would really have the advantage, for they can, in a measure, make the result fit the estimate.

A Remedial Suggestion.

It is an evident fact that any machinery made on this coast of the country must be produced for the same cost, plus freight charges, and must be sold here at the same price; and as transportation cheapens, which it will do materially on the opening of the Panama canal, the conditions will be worse than they now are, unless the labor costs can be equalized between the East and the West. In all classes of machinery they have to go into general competition, the price obtainable here is easily known. The manager of any of our engineering establishments knows, or ought to know, what the materials required for the production of any given piece of machinery cost; he knows, or ought to know, what the percentage of general expense or overhead charges, which includes cost of management and every other operating cost not charged directly to this particular thing, is. He knows what per cent he must add for profit. But the largest item—the cost of labor—he must assume from his experience, which may mislead him. And the trouble here to-day is the inability of those operating engineering works to establish the cost of labor. I used in estimating, of which I have done a great deal, to divide the work to be estimated on into as many units as possible, the more the better; then take each unit and carefully figure out the hours' work that would be required on the various operations to complete it—going on my own knowledge and the record of other work that came near it in character; then I would group these units into a part that would appear in the estimate as a distinct portion, that could be placed in the shops under a special number and its actual cost compared with the estimate. In that way many years of experience enabled me to estimate closely, when conditions were constant, which of late years have been far from the case. Many a time I have watched the progress of some piece of work, comparing it regularly with the estimate. I would often go to the leading man when the cost would come dangerously near my estimate and say something like this to him: "Jimmie, when will you get done with this, and can't you reduce the force and do just as well?" To which he might reply, "I think, Mr. Dickie, we will be able to complete this job to-morrow," and I would go away, satisfied that my estimate was all right, dismiss it from my mind, and I might not see the job again for a week; but just as likely as not when I did see it again, Jimmie and his gang would be still at work on it and my estimate all gone to smash. Now why should not Jimmie and his gang have something to say about the cost of labor for that job and agree to accept that cost as their compensation at the time the estimate is made? In other words, I would suggest the system for the Pacific coast that I have long advocated as a means of enabling our shops to meet the outside competition,—that of taking the workmen, or their representatives, into counsel when the estimates are made for any work, and have the men or their representatives, when satisfied with the estimate for labor, accept the amount so estimated as the amount that would be paid to the workman for all the labor included in the estimate.

The Method of Operation.

This would extinguish the wage question, and with it the uncertainty in regard to the outcome of any contract, and would give capital the necessary confidence to engage in the work of producing here the machinery needed on this coast. It would avoid all fighting with the unions and the loss and distress entailed thereby. I have pointed out what is being done in other parts of the country to insure a known output from a given number of men and tools. A knowledge of that work would be a great help to the manager of works here, and perhaps more so to the men, who, if they are to abide here and live by the work they have been trained to do, must find a way to do their work at such a cost as will enable those having work to do to place it in the works that gives them employment. I have described my plan in detail elsewhere and need not go into details here. Briefly it is this: The men in each department of the works would select one of themselves to represent them in contracting for work. These men would be chosen for a certain time, say one year; that is, there would be an opportunity for change every year. So that the best men in each department would form the Works committee in all dealings with the office, and a contract signed by them would be binding on all the men. This committee would rate all the men in the various departments, the rate in no case to be more than the prevailing rate of the district.

Co-operative Estimating.

In making all estimates for work, the factors forming the estimate should be:

First: The actual cost in the works of all materials required for the work being estimated on.

Second: The general expense to be borne by the work in question. This includes all actual costs not charged directly to specific work, such as expense of operation, management, maintenance of plant, power, interests on borrowed money (not capital), taxes, advertising, foremen and all men, such as watchmen, sweepers, etc.; in fact, everything not charged directly to the work in progress, the item known as overhead charges. The pro rata of this charge would be the proportion that the work being estimated upon would bear to the average year's output.

Third: The actual cost of labor which the manager would estimate on, according to his experience, which would be carefully gone into by the workingmen's committee, and, if necessary, changed in accordance with what was mutually agreeable; and, when satisfactory, the total amount of this item would be the sum to be paid to the men.

Fourth: Profit, which would be a percentage on the sum of the three foregoing items. This percentage should be known to the workmen's committee and they should be satisfied about it.

It might be that the sum total would

be more than in the judgment of the manager would secure the work; in that case he would call in the Workmen's committee and explain his reasons for thinking their price would not secure the work, then arrange either to deduct something from the labor cost, or the profit item, or both, as might seem best, or decide to let the work go elsewhere.

When work was secured the contract for the labor item would be signed by the committee and its amount posted up in the works; the amount for the labor would be credited on the books to the labor account; payments would be made to the men monthly, or as might be considered best mutually, these payments to be on the wage rate fixed by the committee less 10 per cent, each man's time being kept, as is is the oi. hrdlu shrdlu shrdlu shrdluhrd each man's time being kept, as is the present custom, and the amount thus paid out charged against the amount of this contract in the labor account book. On the completion of the contract, the amount remaining would be carried over to the labor surplus account, from which dividends would be paid from time to time, the dividend being a percentage on the amount that each man had been paid in advance wages.

By this system the earnings of any man do not depend on any job, but it is the share of the surplus from all the work done during the year or six months that the dividend period covers. It would meet the idea of the trades unions that the strong should help the weak. It gives to every man the dignity of a contractor. The trades unions would then be able to perform a great and beneficent work, and labor would always have the chance to meet or not meet the price that the market and the times afford. Every man would be directly interested in the product of himself and his fellow-workmen. It would not be like the task and bonus system, where a man must reach and pass a mark that has been set for him in order to get anything more than the prevailing rate of wages; but whatever he or his fellow-workmen may do that is better than the estimate will help to swell the dividend. Something like this is the only hope I see for the future of the engineering shops of the Pacific coast. We must produce work here at a cost that will keep our own markets, and it can be done by the labor and the capital going into partnership to do it. Only those who have been in the fight and know what a struggle it is can understand what such a system would mean. The employers, I think, might hesitate to take the men they have been fighting so long into counsel with them as to the cost of work. I do not believe such confidence would be misplaced, and it is the only way to bridge the gulf that lies between them, and without such bridge there is no crossing, and no hope for the future of our industries here. I should not expect any opposition from the trades unions to such a plan. They must realize that unless a change takes place there will be a continued and increasing depression in the engineering trades here until everything we require in the way of machines will be imported from other parts of the country. There is no reason why we should not be able to hold our own on the Pacific coast in all the engineering trades, but in order to do so the men who plan and direct and finance must join hands in a close partnership with the workman, one and all having the same purpose in view: our own work for our own shops. Such a combination will make it possible for the other party, the man who orders the work, to have his motto also: My work goes to the shop at home.

THE RELATIVE CORROSION OF WROUGHT IRON AND STEEL PIPES

Showing Made by Steel Pipes Contrary to Generally Accepted Beliefs.

At the annual meeting of the American Society of Heating and Ventilating Engineers, held in New York in November, 1908, a paper was presented by T. N. Thomson, member, in which, after reciting some experiences with iron and steel pipe and the opinions of numbers of plumbers, steam fitters and others, nearly all of which were condemnatory of steel pipe, he gives the result of a corrosion test instituted with a view of determining, if possible, the actual corrosion values of iron and steel pipe as to resistance to corrosion.

The test consisted of a number of pieces of wrought iron and steel pipe inserted in a heating system in the instruction building of the International Correspondence School, at Scranton, Pa. A piece of 2-inch pipe, 10 feet long, was removed from the outflow pipe close to the boiler, where the temperature varies from about 160 to 212 degrees, and replaced by 10 short pieces of 2-inch iron and steel pipe screwed together. Provision was made to guard the pipes against the influence of stray electric currents by connecting points beyond the samples with independent wire connections. The samples were installed in March, 1906, and were removed in March, 1907, a period of a few days over one year, and were in constant service during that time. Before installing, the samples were each weighed separately without the couplings, so that after removing and washing out of all rust and weighing again, the difference indicated the total weight of metal lost by corrosion. It was found that 9 13-32 pounds of iron pipe lost 20¾ ounces, while 9 11-32 pounds of steel pipe lost 24⅞ ounces. At first thought it would appear conclusive that, as the steel pipe had lost more metal than the wrought iron, it follows that the wrought iron pipe is the more durable, but Mr. Thomson points out that such a conclusion would be misleading and absurd, because the life of a pipe depends not upon the total amount of corrosion but upon the deepest pitting; as, for instance, a certain pipe may lose 1 per cent of its weight by corrosion when it begins to leak from some of the pits which have come through, when another pipe may have lost 50 per cent of its weight and still be perfectly tight and serviceable. Therefore, in order to determine the relative life of samples, it was decided to measure the depth of the pittings and base conclusions on the measurements so found. With this end in view, each sample was sawed open lengthwise and the five deepest pittings in each half were carefully measured by micrometer, making a total of 100 micrometer measurements.

It is believed that the measurements taken are correct within 0.001 inch. Table 1 herewith is a record of the results of these weights and measurements:

TABLE I.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.
Kind of Pipe.	Blk. W. Iron.	Blk. Steel.	Galv. W. Iron.	Galv. Steel.	Blk. W. Iron.	Blk. Steel.	Galv. W. Iron.	Galv. Steel.	Blk. W. Iron.	Blk. Steel.
Weight without coupling when put in.	13/64 lb	3/32 lb	15/32 lb	25/32 lb	3/32 lb	5/32 lb	10/32 lb	18/32 lb	7/64 lb	3/32 lb
Weight without coupling when removed and rust washed out.	26/32 lb	20¼/32 lb	13/32 lb	23/32 lb	20¼/32 lb	19/32 lb	6/32 lb	15½/32 lb	21¾/32 lb	18/32 lb
Loss in weight by corrosion.	1/4 oz.	3/8 oz.	1 oz.	1 oz.	3/8 oz.	9 oz.	2 oz.	1/4 oz.	1/8 oz.	1/2 oz.
Per cent loss.....	12.2%	14.9%	1.8%	2.2%	14.9%	17.8%	3.8%	2.2%	14.3%	17.2%
	1 | 1X	2 | 2X	3 | 3X	4 | 4X	5 | 5X	6 | 6X	7 | 7X	8 | 8X	9 | 9X	10 | 10X
Depth of five deepest pits in each half of each sample in inches.	.078 | .060 .078 | .083 .072 | .074 .080 | .076 .072 | .059	.056 | .061 .045 | .069 .068 | .071 .069 | .063 .069 | .075	.048 | .030 .043 | .042 .038 | .049 .029 | .023 .029 | .016	.055 | .092 .044 | .082 .045 | .068 .038 | .070 .058 | .050	.073 | .057 .072 | .045 .062 | .062 .073 | .058 .050 | .056	.053 | .065 .046 | .073 .063 | .053 .033 | .053 .042 | .065	.048 | .050 .059 | .027 .055 | .060 .070 | .074 .049 | .068	.049 | .041 .031 | .040 .042 | .023 .026 | .048 .041 | .046	.045 | .062 .044 | .066 .057 | .075 .069 | .054 .042 | .050	.051 | .056 .037 | .052 .043 | .066 .041 | .067 .062 | .045
	1 | 1X	2 | 2X	3 | 3X	4 | 4X	5 | 5X	6 | 6X	7 | 7X	8 | 8X	9 | 9X	10 | 10X
Thickness of metal under pits in inches.	.076 | .094 .076 | .071 .082 | .080 .074 | .078 .082 | .095	.098 | .093 .109 | .085 .086 | .083 .085 | .091 .085 | .079	.106 | .124 .111 | .112 .116 | .105 .125 | .131 .125 | .138	.099 | .062 .110 | .072 .109 | .086 .116 | .084 .096 | .104	.081 | .097 .082 | .109 .092 | .092 .081 | .096 .104 | .098	.101 | .089 .108 | .081 .091 | .101 .121 | .101 .112 | .089	.106 | .104 .095 | .127 .099 | .094 .084 | .080 .105 | .086	.105 | .113 .123 | .114 .112 | .129 .128 | .106 .113 | .108	.109 | .092 .110 | .088 .097 | .079 .085 | .100 .112 | .104	.103 | .098 .117 | .102 .111 | .088 .113 | .087 .092 | .109

Assuming that corrosion were continued at the rate which existed during the period of the test, the different samples would have been corroded through at the end of the number of days given in table 2:

TABLE II.

Plain Pipe.		Days.
No. 10	Steel pipe	850.4
No. 5	Wrought iron pipe.....	780.5
No. 6	Steel pipe	780.5
No. 2	Steel pipe	759.7
No. 9	Wrought iron pipe	759.7
No. 1	Wrought iron pipe	686.5

Galvanized Pipe.		Days.
No. 8	Steel pipe	1,162.9
No. 3	Wrought iron pipe.....	1,162.9
No. 7	Wrought iron pipe	770.0
No. 4	Steel pipe	619.3

From this the average life of a plain steel pipe was calculated at 796.9 days, and of the wrought iron at 742.2 days, a difference of 54.7 days in favor of steel. In view of the facts set forth in Mr. Thomson's paper, the society appointed a committee to further investigate the subject by means of actual tests continued over a period of time under daily working conditions, and at the 1909 meeting it reported as follows:

Your committee appointed to continue tests and secure data on the relative corrosion of wrought iron and steel pipes hereby reports progress.

It is endeavoring to accumulate facts obtained by tests made under working conditions. It is not looking for opinions, because it has reason to believe that very few engineers have had an opportunity to give sufficiently close attention to this subject to correctly identify wrought iron from soft steel pipes while pursuing their regular vocation. This being so, your committee feels that it should make tests itself, or have them done under its own supervision, and it is along this line that we are now endeavoring to collect data.

Up to the present time we can only report definitely on one test as follows:

This test consisted of six pieces of 2-inch strictly wrought iron pipes and six pieces of 2-inch steel pipes, each about 9 7-16 inches long over all measurements including the threads, and joined together with wrought iron couplings in the ordinary manner, as shown in Fig. 1. These samples were secured from different sources which we will, for convenience, represent by the letters A, B, C and D, and were tested out and identified. They were screwed together and inserted on the same line and under exactly the same conditions as existed in the test which was illustrated and described in the paper by T. N. Thomson at the 1908 annual meeting of this society. The test we report now was made, in a measure, as a check on the test previously referred to in the said 1908 paper.

We consider it valuable at this time, inasmuch as it shows the behavior of modern wrought iron and steel pipes when subjected to internal corrosion during actual working service, each sample of pipe in the test being subject to exactly the same working conditions and the same corrosive influences as the others.

The samples were inserted in a hot-water circulating line, as shown in Fig. 2, being located near the ceiling of the engine room of the Instruction building

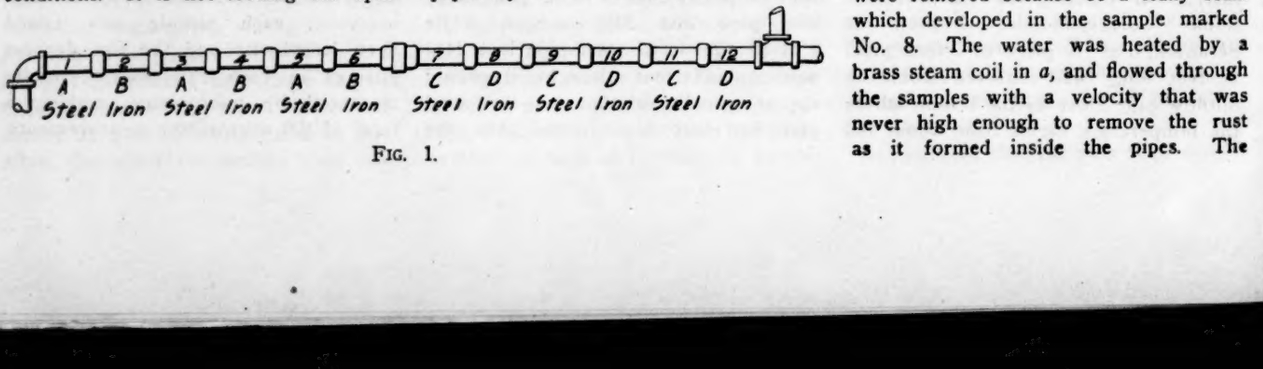


FIG. 1.

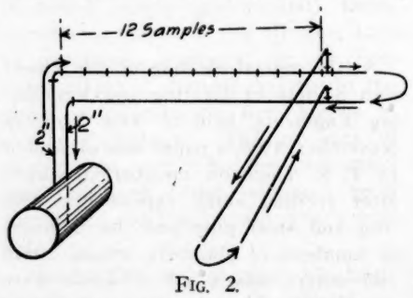


FIG. 2.

of the International Correspondence Schools in Scranton, Pa. The samples were inserted Nov. 18, 1907, and were used as part of a hot water circulating and distributing system that conveys hot water from a boiler *a* to 24 combination faucets at press room sinks continuously till Nov. 30, 1908, when they were removed because of a leaky seam which developed in the sample marked No. 8. The water was heated by a brass steam coil in *a*, and flowed through the samples with a velocity that was never high enough to remove the rust as it formed inside the pipes. The

Pipes put in service, November 18, 1907. TEST NO. 2. Pipes removed, November 30, 1908.

Boiler End.	1 Steel. A.		2 Iron. B.		3 Steel. A.		4 Iron. B.		5 Steel. A.		6 Iron. B.		7 Steel. C.		8 Iron. D.		9 Steel. C.		10 Iron. D.		11 Steel. C.		12 Iron. D.
	1 T.	1 B.	2 T.	2 B.	3 T.	3 B.	4 T.	4 B.	5 T.	5 B.	6 T.	6 B.	7 T.	7 B.	8 S.	8 S.	9 T.	9 B.	10 T.	10 B.	11 T.	11 B.	12 T.	12 B.
Length in inches end to end of thread..		9 7/16		9 7/16		9 7/16		9 7/16		9 7/16		9 7/16		9 7/16		9 7/16		9 5/16		9 7/16		9 11/16		9 7/16
Weight in ounces when first put in without couplings		38½		41		38½		41		38¾		41		40⅜		39⅝		41⅜		41⅜		41		41
Weight without couplings in ounces when pipes are taken out and rust removed...		31⅝		35¼		32½		34¾		32¼		34¾		35⅛		32¾		34½		35⅛		35¼		32
Weight in ounces lost by corrosion.....		6⅞		5¾		6		6¼		6½		6⅝		5¼		6⅞		6⅞		6¼		6½		9
Per cent of weight lost by corrosion....		17.9—		14+		15.6—		15.2+		16.8—		16.2—		13+		17.4—		16.6+		15.1+		15.6—		22—
Thickness of material under deepest pits	0.1264	0.072	0.0750	0.0862	0.0833	0.0906	0.0937	0.0820	0.0935	0.0983	0.1117	0.1225	0.0490	0.0851	0.0683	0.1000	0.0752	0.0540	0.0872	0.0463	0.0814	0.0472	0.0910	0.0632
	0.0984	0.0816	0.0842	0.0966	0.0875	0.0901	0.1030	0.0992	0.0935	0.0857	0.1057	0.1150	0.0633	0.0840	0.0827	0.0839	0.0670	0.0638	0.0854	0.0620	0.0516	0.0659	0.0800	0.0460
	0.0965	0.0830	0.0830	0.0900	0.0874	0.0940	0.0890	0.1070	0.0935	0.0757	0.0983	0.1055	0.0590	0.0722	0.0598	0.0930	0.0520	0.0620	0.1057	0.0823	0.0406	0.0387	0.0868	0.0578
	0.0943	0.0830	0.0957	0.0833	0.0850	0.0887	0.0812	0.1015	0.1000	0.0970	0.1164	0.1047	0.0767	0.0766	0.1078	0.1064	0.0840	0.0647	0.1005	0.0820	0.0547	0.0480	0.0810	0.0480
	0.0890	0.0700	0.0930	0.1042	0.0953	0.0841	0.0809	0.0870	0.0944	0.0825	0.1017	0.1160	0.0534	0.0850	0.0789	0.0999	0.0890	0.0695	0.1132	0.0883	0.0608	0.0720	0.0516	0.0720
Least thickness	.....	0.0700	0.0750	.....	0.0833	.....	0.0809	.....	.....	0.0825	0.0983	.....	0.0490	.....	0.0598	.....	0.0520	.....	.....	0.0463	.....	0.0387	.....	0.0460

temperature of the water was approximately 200 degrees Fahr., and the pressure varied from about 80 pounds to 130 pounds per square inch.

The accompanying table shows the effect of the corrosion on the different samples.

It will be observed that the steel pipe obtained from A is very much superior to the steel pipe obtained from C. The metal under the deepest pitting in the A samples is 0.0700 of an inch thick,

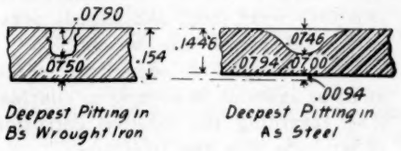


FIG. 3.

while the metal under the deepest pitting in the C samples is 0.0387 of an inch thick. This means that C's pipe will corrode through much more rapidly than A's pipe. The table shows that the weight of each of A's samples was 38½ ounces, while C's samples each weighed about 40⅜ ounces for the same length. This means that C's pipe had originally an average thickness greater than that of A's pipe, yet the thicker pipe is considerably less durable than the thinner pipe, as can easily be seen from the samples which are open here for your inspection.

In a similar manner it can be seen that the samples obtained from B are much more durable than the samples obtained from D, even although the original weights and thicknesses were practically the same in both.

It will be seen that the least durable piece of pipe in the test is C's No. 11, which has 0.0387 inch of thickness under its deepest pitting, while the second and third poorest pieces are D's pipe with a difference of 0.008 of an inch in favor of the latter.

The samples obtained from C and D can hardly be called first-class pipe when compared with the samples of A and B.

Assuming the samples from A and B to be good quality steel and iron pipe, respectively, we will now consider their relative lives. To accurately obtain this we must find the depth of the deepest pitting and compare it with the original thickness of the pipe. Thus:

A's poorest steel sample is No. 1, and the deepest pitting is in the bottom half. B's poorest wrought iron sample is No. 2, and the deepest pitting is in the top half. Fig. 3 shows the depths of the pittings at these points.

The standard thickness of 2-inch full-weight pipe is 0.154 inch, but as the steel samples were 38½ ounces, as against 41 ounces for the iron, the original thickness of the steel was practically

$$\frac{0.154 \times 38.5}{41} = 0.1446 \text{ inch.}$$

The exact depth of the pitting in the wrought iron, therefore, is 0.154 — 0.0750 = 0.0790 inch, while the depth of the steel is 0.1446 — 0.0700 = 0.0746, showing that the actual depth of the deepest pitting in the poorest piece of A's steel pipe is not as bad as the actual depth of the deepest pit in the poorest pipe of B's strictly wrought iron, the difference being 0.0790 — 0.0746 = 0.0044 of an inch in favor of the steel pipe. If we consider the fact that steel is about 2 per cent heavier than wrought iron, the difference will be in favor of the steel.

If A's steel samples had been originally as thick as B's iron samples, the metal under the deepest pitting would have been about 0.0700 + 0.0094 = 0.0794 as against 0.0750 for the iron.

This test checks up well with the aforesaid 1908 paper, and we believe demonstrates that modern steel pipe of good quality is, at least, as durable as modern strictly wrought iron pipe of good quality, and is very much superior

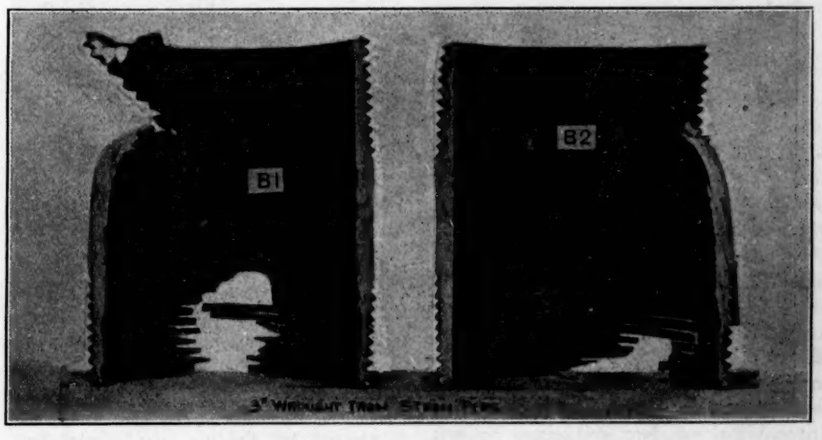


FIG. 4.

to a poor quality of wrought iron in this class of work.

This test suggests that the durability of a pipe depends more upon the quality of the metal than upon its thickness.

In closing we desire to call special attention to the fact that we find that it is not safe to accept reports regarding the corrosion of wrought iron and steel pipes without first identifying the materials, because so many engineers cannot ordinarily distinguish the difference between them.

We can quote a few instances to prove this statement, but the following we think is sufficient:

At our last annual meeting one of our members brought two 3-inch short nipples and presented them as examples of quick corrosion in steel pipe. They were believed to be steel nipples by some of the members, while others thought they were wrought iron, but nobody had a definite opinion. We were then requested to have them taken away and tested, which was done. We sawed each of the nipples in halves and had a photograph taken of each of the defective halves. They are shown in Fig. 4. We had these nipples tested in three ways by three entirely different people. A test by analysis made by an experienced metallurgical engineer showed the following composition:

	Sulphur.	Phosphorus.	Manganese.	Carbon.
B 1.....	0.022	0.229	Trace.	Trace.
B 2.....	0.026	0.251	Trace.	Trace.

The analyist's decision is that there is no question of this material being wrought iron.

A fracture test being applied showed without a doubt that the nipples are wrought iron, as you can see by the broken pieces we lay before you for inspection.

The acid test was applied by an experienced structural engineer in accordance with the instructions published by pipe manufacturers, and his decision is that the nipples are both wrought iron.

So here we have a specific case where an expert heating engineer presented to our body two wrought iron samples under the impression that they were steel, and nobody present could prove him wrong.

This example is enough to teach us to be cautious in coming to conclusions regarding the relative corrosion of wrought iron and steel pipes..

AN EARLY WESTERN BLAST FURNACE.

The activities of the Western Steel Corporation in constructing a steel plant at Irondale, Wash., near Seattle, has awakened considerable interest in the opportunities for iron and steel manufacture in the far west and in this connection definite information regarding the various plants on the Pacific coast which might serve as nuclei for steel making establishments is of value.

There are only two blast furnaces west of the Rocky mountains. One, at Irondale, Wash. is owned by the Western Steel Corporation. It is in connection with this furnace that the open hearths, rolling mills and other steel making equipment are being built. The only other blast furnace on the Pacific coast is at Oswego on the west bank of the Willamette river seven miles south of the city of Portland, Ore. This furnace is owned by the Oregon Iron & Steel Co. of Portland, and is occasionally operated in connection with the Oswego cast iron pipe foundry owned by the same interest. The furnace and its auxiliaries as they stand today comprise what is probably the most complete and modern plant of its kind in the west.

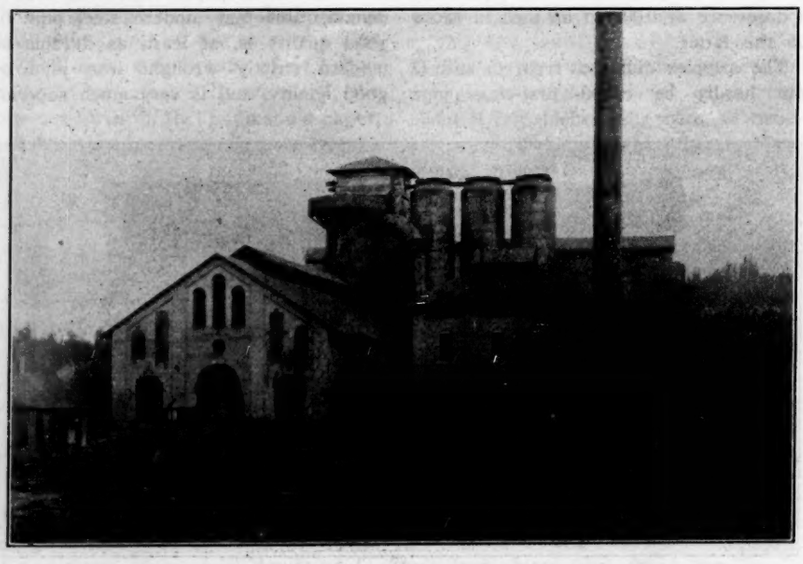
The stack is 65 feet in height and 13 feet in diameter at the bosh. It is fitted with six, 5½-inch tuyeres. The Irondale furnace is 56 feet high and 11 feet in bosh diameter. The bosh walls of the Oswego furnace are water cooled and the furnace is lined with 24 inches of fire brick and 18 inches of common brick. The downtake gas flue is 6 feet 6 inches in diameter lined with firebrick.

There are three modern checkerwork, two pass stoves, each 75 feet in height by 15 feet in diameter. An 800-horsepower Weimer blowing engine having a capacity of 12,000 cubic feet of free air per minute supplies the blast. In addition there is the cast house, two charging elevators of 5,000 pounds capacity each, ore bunkers with storage space for 6,000 tons of ore, a lime house with a capacity of 3,000 tons and the usual minor auxiliaries which go to make up a complete blast furnace equipment. The furnace has always been run on foundry iron and no steel making equipment has been provided.

Produced First Pig Made on Pacific Coast.

The first pig iron manufactured on the Pacific coast was produced in the Oswego furnace Aug. 24, 1867. The activities of the furnace are closely associated with the early development of the iron business in the far west and its history is of interest.

The first stack at Oswego was built in 1866 by the Oregon Iron Co. which has been incorporated Feb. 23, 1865, with a capitalization of $200,000. Soon after the construction of the stack, Henry Villard, the pioneer president of the Northern Pacific Railroad, became interested in the project. A contract was made between the railroad and the Oregon Iron Co. by the terms of which the iron company was to go into the steel rail business and furnish all the rails for the western half of the Northern Pacific, including the main line and its branches. Plans were drawn for rolling mills and steel making equipment but the early financial troubles of the Northern Pacific prevented the fulfillment of the contract and the rolling mills were never built. The furnace, however, was in blast almost continuously for 10 years.



OSWEGO STACK OF OREGON IRON & STEEL CO.

The first iron was melted with charcoal made from fir wood burned in charcoal kilns erected at the works. The blast was furnished by blowers driven by water power. The cylinders and pistons of the blowing equipment were built of wood.

In 1878 the plant was bought by the Oswego Iron Co., which removed the wooden appliances and operated the furnace intermittently until Oct. 26, 1882, producing in four years 18,500 gross tons of pig.

The Oregon Iron & Steel Co., the present owners, took over the plant in 1882 and produced 14,663 tons of pig iron in the two succeeding years. Some of the iron made during this period sold as high as $40 a ton.

Between 1885 and 1889 the company was reorganized with a paid up capital of $1,500,000 and the furnace was completely rebuilt and equipped as described in the foregoing.

The ore mines are 2½ miles west of Oswego, being connected therewith by a narrow gage railway. The ore is a brown hematite and that which remains is low grade. The company also owns extensive ore properties in northwestern Mexico.

The Oregon Iron & Steel Co. also owns large tracts of timber. This was purchased originally to provide charcoal but is now much more valuable as lumber. The officers of the corporation at present are as follows: Wm. Ladd, president, and A. S. Pattullo, secretary, both of Portland, Ore. The furnace is at present out of blast.

THE DEDICATION OF THE THURSTON MEMORIAL TABLET.

On the evening of Tuesday, Feb. 8, occurred the unveiling of the bronze memorial tablet to Dr. Robert H. Thurston, recently placed in the rooms of the American Society of Mechanical Engineers in the Engineering building, 29 West Thirty-Ninth street, New York. The tablet, which is a beautiful piece of work, is a replica of that presented to Sibley College, Cornell University, by alumni and students, and is the work of Herman H. McNeil, a former student and a personal friend of Dr. Thurston. The exercises were opened by Dr. Alex C. Humphreys, president of Stevens Institute of Technology, with a short address, followed by Prof. John E. Sweet, who had been closely associated with Dr. Thurston in the organization of the society. The following report is abstracted from the columns of the *American Machinist*.

Prof. Sweet told simply the story of Dr. Thurston's connection with the society, in part as follows:

To begin at the beginning—we must hark back to the fall of 1879, when the *American Machinist* was published in a small office at 96 Fulton street, New York City. The journal had been in existence but a few years, and had received contributions from a goodly number of contributors engaged in various branches of mechanical industries and from a wide section of the country. But very few of these contributors were known to the publishers, and fewer still to one another, and the notion came to my mind that it might not be a half bad idea to get as many of these contributors together as we well could, and give the publishers a surprise party, with a faint notion in my own mind that it might lead to an organization. I conveyed the notion of the surprise party to one of the contributors, and he at once gave it away to the editor, with the suggestion that some sort of a mechanical association be formed. The suggestion took root in the minds of the publishers, and Mr. Bailey, the editor, came up to Syracuse to see me about it, or, in fact, he came to inveigle me into writing the invitations; but, not being able to do that willingly, he made me do it anyhow. Among those invited were Alexander L. Holley and Prof. Robert H. Thurston, then in a sanitarium in Dansville, N. Y., both of whom entered heartily into the scheme, and invited many I did not know. Before the meeting, which was held on Feb. 16, I came to New York, and Mr. Bailey and I had an interview with Mr. Holley, and each was to draw up some form of a program for the meeting, and meet the next day to compare notes. As such things usually turn out, Mr. Holley had drawn up a set of rules which were so complete that we could readily indorse them. At the meeting in the afternoon, there were something like thirty present, with letters of indorsement from fifteen or twenty others. Mr. Holley acted as chairman. A good deal of time was spent in discussing the rules, which ended up by adopting those Mr. Holley had prepared, and, too, time was wasted in settling on a name, when Mr. Copeland said: "Call it 'The Society of Mechanical Engineers.'" This seemed to settle it, except in the shuffle the word "American" got incorporated, to the regret of possibly no one but myself.

Mr. Copeland, Charles T. Porter, Mr. Holley, E. D. Leavitt, Jr., and myself were chosen as a nominating committee. When the committee met, it was found that the unanimous choice was for George H. Corliss for president. Mr. Corliss refusing, we tried William Sellers, who also declined for a much better reason, and, as Professor Thurston said later—"You couldn't get anyone to accept the presidency, so you hit upon me, a sick man, who could not help himself."

At what is now known as the first annual meeting held in New York City, Nov. 4 and 5, Prof. Thurston had regained his health, and was able to preside and deliver an able address.

Prof. Thurston was elected president for the second time, and these two years were the critical ones in the society's history. Not only while president, but for a long time later, Dr. Thurston was more instrumental in helping up the society than any other man.

Dr. Thurston as a Naval Engineer.

Following Prof. Sweet's address, a communication from Benjamin F. Isherwood, United States engineer-in-chief of the navy, retired with rank of rear admiral, was read by Prof. Hutton and was, in part, as follows: "My long and intimate personal acquaintance with Prof. Thurston was intensified by our professional interest in the same subjects. His exceptionally valuable life was devoted to the improvement of the world in the only way in which it could, in his opinion be improved, namely, by the cultivation of physical science. Those who knew him best, valued him the highest and his death saddened all who knew him well enough to appreciate his gentle qualities as well as his lofty aspirations."

In July, 1861, Dr. Thurston entered the service and served at sea continuously until the close of the war, taking part in the battle of Port Royal and at the siege of Charleston. While still a second assistant engineer, he was placed in charge of the machinery on the "Chippewa," and later served on the monitor "Dictator," which was the largest built up to that time.

With his fine preliminary training at Brown University, backed up by four years of practical experience in the navy, it was obvious that Dr. Thurston was well equipped for duty as an instructor, and that was borne out by his remarkably good record at the academy.

Dr. Thurston at Stevens Institute.

Col. E. A. Stevens, representative of the Stevens family, founders of Stevens Institute, spoke, in part, as follows: "The history of mechanical engineering in the United States will always bear witness to Dr. Thurston's ability, untiring energy and the liberality with which he freely gave to his beloved profession all that his ripe experience and trained observation could give. Whatever may have been the value of his other work at Stevens, none of it equals in importance his share in the development of the system of instruction and the influence of his personality and his standard of pro-

fessional ethics on those who were thrown in contact with him.

Dr. Thurston in Literature and in Research.

In speaking on this topic, William Kent said that his acquaintance with Dr. Thurston began near the end of the year 1874, when he called upon him to make arrangements for entering the junior class in Stevens Institute of Technology. Dr. Thurston was then 35 years of age and was professor of mechanical engineering, meeting his classes two hours a day. At the same time, he was editing the four volumes of reports of the United States Commission to the Vienna exhibition of 1873, one of the volumes being written by himself; he had shortly before that written a report of the United States Commission for investigating the causes of steam boiler explosions; he was now planning the researches to be made by the United States Board to Test Iron, Steel and Other Metals, of which he was secretary and the most active member. Besides all this he was writing papers for the American Society of Civil Engineers and for the *Journal* of the Franklin Institute, concerning the results of his researches.

In 1871, he had conducted a series of boiler tests on several different makes of water tube boilers at the American Institute fair in New York. In 1873, he had organized a mechanical-engineering laboratory for the purpose of making engineering researches, the first of the kind to be established in the United States. About the same time he invented his well known autographic testing machine for testing materials by torsion, and later he invented the machine for testing lubricants, in which some of the principles of the torsion machine were embodied.

Such intense mental activity as Dr. Thurston exhibited in these years led to its natural result, nervous exhaustion. There was a time in 1876, when he visited the institute only for a few minutes each day, and five minutes' conversation on any technical question would almost prostrate him.

In 1873, Dr. Thurston discovered the phenomenon of the elevation of the elastic limit of iron and steel. It was also discovered independently in the same year by Commander L. A. Beardslee, U. S. N. In years following he tried to find other metals or alloys that exhibited the same peculiar action after being strained beyond their elastic limit, but never found one. In 1874, he investigated the burning of tanbark for fuel in specially constructed boiler furnaces, and in 1875 and 1876, he made a number of tests of steam boilers. For some years after 1876, he carried on investigations of lubricants, the results of which are in his book on "Friction and Lost Work." In later years his researches were not numerous or important, for the reason that his time was fully occupied with other work.

Dr. Thurston was an omnivorous reader, and a tremendously active writer. Prior to 1880, most of his technical writings were contributed to the American Society of Civil Engineers and to the *Journal* of the Franklin Institute. After that date his engineering papers were mostly given to the American Society of Mechanical Engineers.

Dr. Thurston's literary work was not confined to engineering matters. In 1873, he contributed to the *Scientific American* a series of 17 articles on his observations in Europe, which included not only what he had seen at the Vienna exhibition, and in the several iron works that he visited, but also his reflections on social conditions in the manufacturing centers.

Dr. Thurston's first important book after his report of the Vienna exhibition was his "History of the Growth of the Steam Engine," published by Appleton in 1878. It is written in his best style, and to those who are at all interested in the subject it is as readable as a novel. It illustrates his painstaking care to be sure of his facts, his skill in arranging them in logical order, and his good judgment in drawing conclusions. In 1877, he brought out a little book on "Steam Boiler Explosions in Theory and Practice."

In 1879, he had his second and last nervous breakdown, more serious than the first, so that he was compelled to spend more than a whole year in a sanitarium, doing no work of any kind. He returned to work in 1880, and then followed 12 years of most intense literary activity, during which he brought out an average of a book every year, some of them large octavos of 1,000 pages each. Here is a list of the books whose first editions appeared in the years 1882 to 1894, inclusive: "The Materials of Engineering," three volumes: 1, "Non-metallic Materials;" 2, "Iron and Steel;" 3, "Brasses, Bronzes and Other Alloys;" "Text Book of Materials of Construction," "Treatise on Friction and Lost Work in Machinery and Millwork," "Manual of Steam Boilers, Their Design, Construction and Operation," "Handbook of Engine and Boiler Trials, the Indicator and the Prony Brake," translation of Sadi Carnot's "Reflections on the Motive Power of Heat and on Machines Fitted to Develop that Power," "Life of Robert Fulton," "Manual of the Steam Engine," two volumes: 1, "History, Structure and Theory;" 2, "Design, Construction and Operation;" "Stationary Steam Engines Simple and Compound," "The Animal as a Machine and Prime Motor, and the Laws of Energetics." Many of these books ran through several editions.

Dr. Thurston at Sibley College.

Walter C. Kerr, director of Cornell University and president of Westinghouse, Church, Kerr & Co., recognized the impossibility of reviewing the full import of the 18 years that Dr. Thurston devoted to Cornell University and limited his address to a few brief remarks on Dr. Thurston as an educator and organizer of rare talent, and also told how he was loved and respected at Cornell.

PRICES OF TODAY AND THIRTY-SEVEN YEARS AGO.

Some interesting figures have been compiled by the Crane Co., Chicago, showing the prices at which valves and fittings sold in 1873 and at the present time, of which a few are given herewith.

The figures are based on the same prices for raw materials, and the 1873 prices have been placed at the level they would have shown had the prices of pig iron and copper been as low then as they are now. There have been material reductions in the prices of raw material entering into these goods. Copper especially is very much cheaper now than in 1873, consequently the reduction in prices of brass goods is considerably greater than shown in the table, which was prepared to show the decrease in price due to other causes than cheaper raw materials. 1873 was a prosperous year for Crane Co., and business conditions then and now are fairly comparable.

	1873 price reduced to equal price on basis of present cost of material.	Jan. 1, 1910, price.
1-inch brass globe valve.	$1.36	$0.60
2-inch brass globe valve	3.58	1.75
1-inch brass gas cock...	0.77	0.38
1-inch brass steam cock	1.34	0.60
1-inch iron cock, screwed	1.47	0.34
2-inch iron cock, screwed	4.40	0.70
4-inch yoke globe valve	20.90	4.95
1-inch cast iron elbow.	0.10½	0.03¼
2-inch cast iron elbow.	0.38	0.08¼
2-inch cast iron flange union	1.10	0.25
1-inch malleable iron elbow	0.12½	0.04¼
2-inch malleable iron elbow	0.44	0.14½
1-inch malleable union.	0.37½	0.08½

The selling price of wrought tube radiators in one-half of the above time came down from 75 cents to 16 cents per foot of radiation.

The rate of wages for labor is fully as high now as it was then; and the natural deduction is that all the shown results in decreased selling prices are due to improvements in manufacturing—that is, the company is now manufacturing, not simply making goods.

NEWS FROM MANY INDUSTRIES

(In order to assist the post offices in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers:—

The following manufacturing concerns have filed articles of incorporation:

The Snead Architectural Iron Works, Louisville, Ky.; $25,000; by J. W. Gayle, W. A. Lee, Al Scott and others.

The Radiant Electric Mfg. Co. Ltd., Toronto; $40,000; by Edward W. Drake, George H. Fairles and Thomas B. Slocombe.

The Peter Boller Machine Works, 9 North Curtis street, Chicago; $2,500; to do a general machinery and manufacturing business.

The Hill Pump Valve Co., Chicago; $21,500; machines and devices; by Jos. E. Hill, W. M. Gilbert and Theodore M. Gilbert, Chicago.

The Waterville Iron Works, Waterville, Me.; $50,000; castings; by F. B. Philbrick, F. P. Webber and M. F. Bartlett, all of Waterville, Me.

The Joshua Brown Co. Ltd., Pembroke, Ont.; $45,000; to manufacture butter separators; by William L. Hunter, Edward A. Dunlop and Robert W. Gordon.

The Fruin Drop Forge Co., 235 East Thirty-fifth street, Chicago; $100,000; by Robert E. Fruin and others, to do a drop forging business.

The Illinois Concrete Machinery Co., Buda, Ill., $140,000; by L. H. Scott, C. S. Scott and Howard H. Priestly.

The A. B. Casting Co., Cleveland; $100,000; by T. L. Johnson, O. O. Vrooman, H. A. Beckett, T. A. McCaslin and L. C. Spieth.

The Regal Motor Car Co. of Canada, Ltd., Walkerville, Ont., $50,000; by John E. Lambert, Charles R. Lambert, Bert Lambert, F. Haines and E. N. Richards.

The J. B. Morris Machine Tool Co., Cincinnati; $125,000; by George McG. Morris, Samuel M. Blackburn, S. L. Miner, G. H. Stearns and Alfred K. Nippert.

The Cambridge Mfg. Co., Cambridge, Mass.; $5,000; general foundry; by Almon C. Bugbee, Fred F. Stockwell, both of Boston, and William L. Ducey, Cambridge.

The F. M. Olson Engineering Co., Chicago; $2,500; to manufacture machinery; Freeman M. Olson, 5477 W. Madison street, Chicago, may be addressed.

The Hawkins-Wilson Co., Brighton, N. J.; machine shop and iron foundry; $125,000; by C. Hawkins, L. M. Wilson, Philadelphia, Pa., and H. W. Phillips, Brighton, N. J.

The Roller Ball Lock Co., Cleveland; $30,000; by John H. Schulte, Joseph Schulte, Frank E. Dellenbaugh, Theodore A. Senn, and Anthony Poebling.

The Warner-Wingate Co., Manhattan, N. Y., $10,000; tools, machinery and mechanical supplies; by Hubert F. Warner, Plainfield, N. J.; Charles G. Wingate, Amityville, N. Y., and Thomas F. Hyler, Plainfield, N. J.

The Harold L. Bond Co., New York City; $25,000; machinery and railroad supplies; by Harold L. Bond, Malden, Mass.; George S. Hedge, Wellesley, Mass.; Howard O. Weaver, 604 West 162nd street, New York City.

The Unit Tablet Co., New York City; $10,000; to manufacture, buy and sell bronze and other metals or alloys; by William Sterzbach, Richard Packert and T. J. Norton, all of 101 East 129th street, New York City.

The Boyd Steel Springs Co., New York City; $10,000; to manufacture and deal in steel springs, automobile and machine parts; by Henry B. Boyd, Charles A. Cook, both of 505 State street, Brooklyn, and Archibald R. Boyd, 128 Broadway, New York City.

The Hudson Brass Works, New York City; $15,000; lighting fixtures and supplies; by Abraham Cooper, 44 Kelly street, the Bronx; Theodore Gutgerman, 2 Howard Street, New York City; Hene Cooper, 44 Kelly street, the Bronx.

The United Track & Wheel Brake Co., New York City.; $1,000,000; to manufacture and sell brakes and other railway appliances, etc.; by Martin B. Bloomer, Westfield, N. J.; Clarence E. Smith, Sheepshead Bay, N. Y., and James K. Duffy, 15 Wall street, New York City.

New Construction:—

The Veitch-Mathews Engine Co. expects to begin construction work soon upon its proposed buildings at Bessemer, Ala.

The Rock Island railroad will begin shortly the construction of machine shops at Liberal, Kas., the main building to be 40 x 60 feet.

The Peerless Motor Car Co., Cleveland, has let a contract to the Bolton & Pratt Co. for a concrete, three-story shop, 50 x 180 feet.

John W. Conway, Hartford, Conn., has taken out a permit to build a frame foundry on the east side of Broad street.

The Wright Wrench Co., Canton, O., which has been located in the old Aultman building, will begin shortly the erection of a plant in the south end of the city.

The foundry which the Valdosta Foundry & Machine Co., Valdosta, Ga., has been building, has been completed, and will be placed in operation within a few days.

J. W. Walton, Goliad, Tex., has awarded a contract for the erection of a machine and repair shop, 36 x 82 feet, in which will be installed tools for a general repair business.

The Bettendorf Axle Co., Davenport, Ia., has let the contract for the construction of a large foundry, 260 x 1,400 feet, to be of brick and concrete. The construction work will be hurried to completion.

The Irwin Foundry & Mine Car Co., Irwin, Pa., will build an addition to its plant, which when the improvement is completed, will be 65 x 150 feet. An additional 75 workmen will be given employment.

The Hupp-James-Halloran Foundry Co., Detroit, is erecting a building on the east side of Lycast avenue south and Jefferson avenue, on a site of one and one-fourth acres which it recently purchased.

The Chattanooga Roofing & Foundry Co., Chattanooga, Tenn., has opened bids for a two-story addition to its wrought iron department, 60 x 70 feet, of heavy mill construction, and galvanized iron roofing.

The American Steel Foundries has been issued a permit to build an addition to its East St. Louis plant, at Twenty-first street and Broadway, the addition to cost $16,000. It will be 100 x 152 feet, of steel and concrete, and will be occupied as a foundry.

The Enterprise Foundry & Fence Co., Indianapolis, has purchased the property of the Mainland Mfg. Co., at Twenty-fourth and Yandes streets, 400 x 650 feet. Work on the construction of a new plant for the Enterprise company will be commenced shortly.

The National Roll & Foundry Co., Avonmore, Pa., some time within the

next two or three months will install an open-hearth furnace in addition to its present running capacity of two cupolas. The castings for the American Rolling Mill Co.'s new sheet mill job secured by this company were sublet, this company not being in a position to make steel castings.

The addition announced by the Dayton Malleable Iron Co., Dayton, O., will be about 150 x 200 feet, and will have a frontage on Fourth avenue extending from the railroad to Conover street. Recently 100 molders were added to the working force, and when the improvements are completed, it is stated by officials of the company, the number of employes will reach about 2,200 men. It is hoped to complete the addition and have it operating by March 15.

The Lee Foundry Corporation, Anniston, Ala., manufacturer of gray iron castings, advises respecting a recent fire that its foundry was entirely destroyed, and the machine and pattern shops were badly damaged. It has made repairs to the machine and pattern shops, and is rebuilding the foundry, 60 x 150 feet, with trussed roof from which overhead trolleys are hung; a fireproof cupola, stock house and material shed. It has on hand machinery with which to replace that lost in the fire. The total loss was placed between $9,000 and $10,000.

The Commonwealth Steel Co., St. Louis, open-hearth steel castings, advises relative to improvements at its steel plant at Granite City, Ill., that it has increased the molding floor capacity about 50 per cent, lengthened its foundry 75 feet, the transfer room 260 feet and the core room 175 feet. It has built a concrete tile chimney, 160 feet high, has installed two new large Niles-Bement-Pond planers, two 10-ton Whiting electric traveling cranes, one 35-ton Whiting electric traveling crane, and is installing a new tubular plant, new compressor, etc. The new parts of the plant have been placed in operation. It is employing something over 2,000 men, and its capacity hereafter will be 40,000 tons a year.

General Industrial:—

The National Brass & Copper Co., Lisbon, O., has increased its capital from $225,000 to $375,000.

The Burch Plow Works Co., Crestline, O., has increased its capital stock from $75,000 to $100,000.

The Rockford Lathe & Drill Co., Rockford, Ill., has increased its capital stock from $20,000 to $50,000.

The Gibbs Stove & Range Co., Kokomo, Ind., has increased its capitalization from $100,000 to $250,000.

The Ferro Machine & Foundry Co., Cleveland, has filed notice of a reduction in capital stock from $433,000 to $383,000.

A. J. Mayers has been appointed receiver for the Hubbard Foundry Co., Hubbard, O. on the petition of William Jeffries, a stockholder.

The Pement Tool Works, Chicago, recently incorporated with a capital stock of $30,000, will continue the forge business of J. A. Pement at 3146 Wentworth avenue.

The sale of the blast furnace property of the Bird Iron Co., Ironton, O., to D. C. Davies, H. A. Marting and others, for $99,000, has been confirmed. The statement is made that the furnace will be lighted shortly.

Paxton & Vierling Iron Works, Omaha, Neb., re-elected these officers and directors at its twenty-fourth annual meeting: President, W. A. Paxton; secretary and treasurer, Louis Vierling; vice president and manager, A. J. Vierling.

B. S. Joyner has purchaser the interest of his partner, George L. Hunt, in a pattern works on Edward street, Waterloo, Ia. The name of the concern will be changed, being known in the future as the Waterloo Pattern Works.

The report of W. H. Colean as receiver of the Colean Mfg. Co., Peoria, Ill., was approved in court recently. A dividend of 20 per cent on the entire indebtedness of the company was declared, this indebtedness amounting to $330,933.

An involuntary petition in bankruptcy has been filed in federal court against the Shenandoah Steel Wire Co., of Lackawanna, N. Y., by creditors with claims totalling $3,657. Alfred L. Becker has been appointed receiver of the company.

The stockholders of the Whitaker-Glessner Co., Wheeling, W. Va., elected officers as follows: Alexander Glass, president; W. L. Glessner, vice president; A. C. Whitaker, treasurer; A. T. Sweeney, secretary; N. P. Whitaker, general manager.

At the annual meeting of the Portsmouth Steel Co., Portsmouth, O., the stockholders elected the following officers: Alexander Glass, president; A. C. Whitaker, vice president; T. H. Jones, secretary and treasurer, Andrew Glass, general manager.

The plant of the Chapman Ball Bearing Co., Boston, was placed in the hands of Joseph P. Schattner and Henry P. Curtiss as receivers by a federal court in Boston. The liabilities are placed at $156,000 and the assets at $211,288.

The following officers have been elected as stockholders of the Wheeling Corrugating Co.: A. C. Whitaker, president; H. C. Whitaker, vice president; Alexander Glass, secretary; W. H. Abbott, assistant secretary; W. H. Manning, treasurer; N. P. Whitaker, general manager.

The Harbison-Walker Refractories Co. has declared a dividend of one-half of 1 per cent on common stock, payable March 1. This is the first dividend to be paid on the common stock since Oct. 1, 1907, when an initial payment of one-half of 1 per cent was made.

The following directors of the Galesburg Malleable Castings Co., Galesburg, Ill., were re-elected at the meeting of stockholders recently: Fred B. Stone, E. A. Turner, E. Z. Williams, Robert Chappell and Dyke Williams. Prospects for the ensuing year were declared bright.

The American Iron & Wire Works, 1622 Carroll avenue, Chicago, has voluntary assigned to David Oliver. The company had been in business for eight years, manufacturing ornamental brass and iron. The liabilities are scheduled at $40,000, and the assets at $10,000.

At the annual meeting of the Eureka Brass Co., 2210 Scott avenue, St. Louis, these officers were elected: President and treasurer, Frank Haggenjos; vice president, John Haggenjos; secretary, Charles Erickson. These officers also constitute the board of directors.

An order for the sale of the plant of the National Steel Foundry Co., New Haven, Conn., for $65,000 has been entered in the superior court at New Haven. The court granted the receivers, H. Stuart Hotchkiss and Frederick B. Farnsworth, the right to borrow $2,500 to pay taxes, insurance, etc.

Louis N. Gatch, assignee of the Bacon & Cheseldine Iron Foundry, Cincinnati, recently declared a dividend of 5 per cent, which will be paid and the assets of the defunct company disposed of. The company assigned in 1893, since which time this is the first dividend declaration made.

The Fairmont Machine Co., Fairmont, Minn., at its recent annual meeting elected these officers and directors: President and manager, F. E. Wade; vice president, A. R. Fancher; secretary, H. E. Woolery; treasurer, W. M. Hay; directors, H. W.

Sinclair, George Snyder and M. J. Aldridge.

The Holland Trolley Supply Co., Cleveland, whose incorporation was recently noted, advises that it is manufacturing a line of street railway material, including trolley bases, harps and wheels. Its offices are located at suite 415 Schofield building, and its shops at 518 Prospect avenue N. W. The treasurer of the company is H. W. Cole.

The Denver Steel & Iron Wire Fabricating Co., Denver, Colo., recently elected directors, who in turn chose as president and general manager Robert L. Riggs, of Victor. The announcement was made that the capacity of the plant at Thirty-eighth and Blair streets will be increased, and a large selling force placed on the road.

The Buckeye Traction Ditcher Co., Findlay, O., has this new board of directors recently elected by the stockholders: M. L. MacLachlan, C. D. Howard, W. D. McCaughey, C. L. Casterline, J. E. Bicknell, W. F. Hosler and J. G. Carrothers. The company is building an addition to its plant which it is hoped to have completed by the middle of March.

The Virginian Electric & Machine Works, Charleston-Kanawha, W. Va., announces that it has purchased the business and patents of the Agnew Electric Co., of Charleston, and the manufacture of the well known types of Agnew direct current motor automatic rheostats, bronze rotary pumps and other electrical apparatus will be continued.

Stockholders of the Massillon Foundry & Machine Co., Massillon, O., re-elected the following officers and directors: President, H. A. Croxton; vice president, J. C. Carnes; secretary and treasurer, F. H. Harrison, who with I. M. Taggart and F. W. Arnold constitute the board of directors. Reports showing a satisfactory business for the year were read.

Stockholders of the Slatington Rolling Mill Co., Slatington, Pa., at the recent annual meeting, re-elected these directors: A. S. Haines, Solomon DeLong, Walter F. Andrews, L. P. Hopkins, all of Slatington; N. J. Martin, of Allentown, Pa.; and E. H. Harrison of Pittsburg. The directors organized by electing the following officers: President, A. S. Haines; treasurer and manager, Solomon DeLong; superintendent, Lewis P. Hopkins; secretary, Walter F. Andrews.

At the annual meeting of the Reading Iron Co., Reading, Pa., these directors were elected: George F. Baer, F. C. Smink, James S. Harris, S. R. Seyfert and Heber L. Smith. The board thereupon re-organized by electing these officers: Chairman, Geo. F. Baer; president, F. C. Smink; vice president, George Schuhmann; treasurer, Frederick Butler; secretary, Geo. W. Delany.

The New York Central railroad has ordered from Jos. T. Ryerson & Sons, Chicago, a 60-inch boiler-makers' punch, to punch 2-inch holes in 1-inch material; also, a special railroad shop friction metal saw. Both these tools are a type specially developed for railroad work by the Ryerson firm, and both are to be installed in the Depew, N. Y., shops of the New York Central.

At the annual meeting of the Newport Foundry Co., Newport, Ky., all the old directors were re-elected, who in turn re-elected the officers: President, Paul Lindholz; secretary and general manager, Frank L. Gamel; treasurer, H. E. Weber; Charles Dahnert, George Meister, Henry Santel and Henry Blotenberg. Reports from various officers show that the company's affairs are prosperous.

The Packer Motor Car Co., of Pittsburg, has been chartered at Charleston, W. Va., with a capital stock of $100,000, to engage in the manufacture of motor trucks, automobiles and accessories. The incorporators are Albert H. Schenk, Wheeling; Wm. Zoller, Edward K. Callahan, Pittsburg; James F. McGarry, East Liverpool, O., and George D. Pratt, Buffalo, New York.

The Obenberger Drop Forge Co., Milwaukee, advises that it has acquired the business of John Obenberger Co., and is incorporated for $30,000. It will make a specialty of drop forge work and will continue to manufacture steel hammered forgings. The officers are: President, John Obenberger; vice president, Henry C. Fuldner; secretary and treasurer, H. W. Ladish.

The directors of the American Steel Dredge Co., Fort Wayne, Ind., heard reports from the officers at a meeting recently held, showing that a fair sized number of employes are now at work at the new plant. The old plant of the original company at Logansport, has been closed, the machinery being shipped to Fort Wayne. The new office building is yet to be completed. President Carr, of Montpelier, and Secretary Rauch, of Logansport, have now removed to Fort Wayne. The annual meeting of the stockholders will be held March 1.

At the annual meeting of the stockholders of the Shull Steel Casting & Mfg. Co., Canton, Ill., these officers and directors were elected: President, Willard Pennock; vice president, John Hahn; secretary, Frank Wise; treasurer, Leonard Shull; general manager, E. G. Van Horn; Simon Essig, and Frank Bordner. The company it is announced has sufficient orders on hand to keep the plant busy for the next seven or eight months.

Hotchkiss, Blue & Co., Ltd., 9 Railway Exchange building, Chicago, has been incorporated with a capital of $60,000, which will be increased probably to $100,000. The firm has been operating as a co-partnership in the manufacture of railway equipment, at Harvey, Ill. One result of the incorporation and increase in capital stock will be to purchase the property which the company now occupies as tenant, and increase the capacity of the plant.

The stockholders of the Lunkenheimer Co., Cincinnati, elected the following directors at the recent annual meeting: Edmund H. Lunken, Sam L. Moyer, Henry Ritter, David C. Jones, William H. Muench, H. Fred Schaefer and George H. Riddell. The directors chose the following officers: President, Edmund H. Lunken; first vice president, Sam L. Moyer; second vice president, H. Fred Schaefer; treasurer, William H. Muench; secretary, David C. Jones; superintendent, Henry Ritter.

Stockholders of the Putnam Foundry & Machine Co., Putnam, Conn., recently elected these directors: L. H. Fuller, Edward Mullan, J. C. Nichols, W. J. Turner, George E. Sharr, Arthur C. Stetson and John P. Barber. The directors in turn elected these officers: President, Edward Mullan; vice president, Arthur C. Stetson; secretary-treasurer and general manager, W. J. Turner; assistant secretary and assistant treasurer, Miss C. A. Hopkins. A dividend of 6 per cent was declared.

The Niagara Brass Foundry Co., Buffalo, recently completed molding two sets of steering wheels of great strength for a Glenn Curtiss aerodome. The wheels are of manganese bronze with a winding drum attachment, the weight of the drum and wheel being 20 pounds. The castings withstood a test of 60,000 pounds to the square inch. The Herschell Spillman Machine Co., of North Tonawanda, was awarded a contract for the construction of 200 engines for the Curtiss company.

The Brown Wrench Co., Ronceverte,

W. Va., advises respecting its recent incorporation that it plans to manufacture the Brown quick adjustable wrench. Some if its machinery equipment is being especially manufactured. The company has secured most of the buildings that it will occupy, as well as a power plant. While the company will need a complete line of machinery suitable for the manufacture of the wrench, it has received estimates on its proposed equipment from several bidders.

Respecting its recent fire, the Snow & Petrelli Mfg. Co., New Haven, Conn., manufacturer of hardware and marine specialties, advises that its stock of machinery, which inventories at about $35,000, was considerably damaged by fire and water, and the office was completely destroyed. The loss as adjusted was about $10,000, practically covered by insurance. The company is occupying a new foundry at 152-156 Brewery street, where it expects to be in full operation by the latter part of the month. It does not contemplate additional building.

The report of the receivers of the P. P. Mast & Co., Springfield, O., agricultural implement manufacturers, has been approved by the federal court at Cincinnati. It covers the period from Aug. 11, 1909, until Feb. 10, 1910, during which time the receipts amounted to $257,225.91, and the disbursements $23,526.41, including the retiring of $62,500 in receivers' certificates. On Aug. 11 the cash in bank amounted to $9,639.21, and on Feb. 10, it was $3,338.71. Receiver H. D. Maize resigned and at the request of the creditors the property will continue under the management of the remaining receiver, W. F. Foos.

The Ohio Foundry Co., Dayton, has taken over the Sterling Electric Motor Co., and has reorganized. A large portion of the stock of both companies has been purchased by those favorable to the consolidation as well as to the change of name to the Ohio-Sterling Co. The capital stock has been reduced, standing at this time at $75,000 preferred and $60,000 common. The officers of the company are J. A. Gauthier, president; F. J. Bucher, vice president; Charles P. Underferth, secretary and treasurer. The Ohio-Sterling Co. will continue to make light and medium gray iron castings, direct-current generators and motors.

At the annual meeting of stockholders of the Buckeye Steel Castings Co., Columbus, O., all of the old directors were re-elected: S. P. Bush, R. S. Warner, John G. Deshler, T. P. Linn and C. B. Goodrich of Columbus; Frank Rockefeller of Cleveland; and Thomas Goodwillie of Baltimore. The board organized by electing S. P. Bush president and general manager, R. S. Warner, first vice president, Frank Rockefeller, second vice president, and Arno Eberlein, secretary and treasurer. Earnings for the year showed a large increase over that of the previous year, and regular dividends were declared on both preferred and common stock.

The Maxwell-Knight Iron Co., Inc., Butler, Tenn., has been organized to take over 600 acres of brown hematite iron ore land owned by Henry V. Maxwell. The officers of the company are: President and general manager, Henry V. Maxwell, Butler, Tenn.; vice president, E. P. Knight, Boston, Mass.; secretary and treasurer, Harry J. Knight, Butler, Tenn. The company plans to increase the plant by another set of logs and ship three cars of ore per day. Since it is planned to operate the mine by hydraulic power, the company contemplates installing a pump lifting 800 gallons of water an altitude of 200 feet through a 6-inch pipe.

The Gulick-Henderson Co., inspecting engineer, metallurgist and chemist, of Pittsburg, Chicago and New York, announces that J. W. Henderson has resigned as treasurer to accept a position as manager of the Verona works of the Standard Steel Car Co., formerly known as the General Castings Co. The metallurgical and foundry department of the Gulick-Henderson Co., which was directly under the supervision of Mr. Henderson, will, in the future, be taken care of by W. G. Ireland, who is well equipped, by many years' experience, to take up the work. It is expected that the Verona works, which have been idle for some time, will be started about March 1.

The Mississippi Valley Iron & Furnace Co. re-elected these officers several days ago at the annual meeting: President, M. S. Bowman; vice president, E. J. Burton; secretary and treasurer, J. W. Donaldson; general manager, W. J. Davis. These officers together with the following were chosen directors: John H. Boogher, Frank S. Tirre and George B. Wheeler.

The Scranton Stove Co., Scranton, Pa., at its recent annual meeting received encouraging reports from the secretary and treasurer, who report the outlook favorable for a prosperous continuation of business in the new year. These officers were re-elected: President, L. A. Lansing; secretary, B. E. Watson; treasurer, A. C. Fuller; sales manager, C. L. Jeffreys, and superintendent, R. W. Fuller.

Trade Notes:—

The Berger Mfg. Co., Canton, O., sheet metal products, announces the opening of a branch office at Kansas City, Mo., in charge of C. M. Kennedy, formerly manager of the Minneapolis branch of the company. The Kansas City office will take care of a large and growing trade in Kansas City, Nebraska and southern Iowa. Mr. Kennedy's offices have been installed in the Dwight building.

G. A. Mason, formerly sales agent of the American Steel & Wire Co., at Kansas City, has been appointed assistant general manager of sales of the Jones & Laughlin Steel Co., in charge of the new wire department which the company is to install at its new plant at Aliquippa. Mr. Mason has already severed his connection with the American Steel & Wire Co., and has entered upon his new duties.

Fires:—

The James Foundry Co., LaCrosse, Wis., suffered a small loss some days ago, a spark from the core oven igniting the roof.

The plant of the Mount Vernon Bridge Co., Mt. Vernon, O., burned Feb. 14, the loss being placed at $125,000, the insurance being $80,000.

The plant of Pusey & Jones, Wilmington, Del., shipbuilders and makers of paper machines, was damaged Feb. 13, the loss being estimated at $4,000.

The foundry of the West Milwaukee shops of the Chicago, Milwaukee & St. Paul railroad was damaged to the amount of about $2,000 by fire spreading from the cupola.

The main buildings of the Baxter Stove Co., and the New Method Stove Co., Mansfield, O., were badly damaged by fire Feb. 18, the loss being placed at $150,000.

The plant of the Proctor Metal Mfg. Co., Milwaukee, was damaged Feb. 15 to the extent of $5,000. The plant of the Milwaukee Wire Fence Co. adjoining was scorched somewhat.

The engine shops of Irwin & Smith, Stanley, Ia., were damaged to the amount of about $3,000 Feb. 2., the fire starting from an explosion of a torch in the engine works.

The fourth attempt in a few months to burn the plant of the Tyler Tube & Pipe Co., at Washington, Pa., was partially successful Feb. 13. The damage done to the plant is estimated at $75,000. It is owned by the Whitaker-Glessner Co., of Wheeling, W. Va.